COMMITTEE ROOM

REBOUND
9/6/03

No. 197.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

RULES AND REGULATIONS.

NOTICE is hereby given, that in pursuance of Resolutions passed by the Committee, the Rules of this Society have been amended as follows:—viz.

WOOD SHIPS.

SECTION 46 has been amended by requiring that in all cases *Treenails be properly caulked outside.*

IRON SHIPS.

SECTION 9. The following has been added as a foot-note:—

"Parties desirous of making any alteration in the construction of *Poops and Forecastles,* may submit their plans for the Committee's consideration and approval.

SECTION 11. A foot-note has been added to the effect that in *Poops and Forecastles* double rivetting will not be required in either the butts or edges of the plates.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

2, *White Lion Court, Cornhill, London, E.C.,*

7th June, 1866.

LLOYD'S REGISTER

OF

BRITISH AND FOREIGN

SHIPPING.

LLOYD'S REGISTER

OF

BRITISH AND FOREIGN

SHIPPING.

FROM 1ST JULY, 1866, TO THE 30TH JUNE, 1867.

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1866.

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1866-1867.

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Wexford	

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TO THE

RULES AND REGULATIONS,

1866—67.

LLOYD'S REGISTER

OF

BRITISH AND FOREIGN SHIPPING.

RULES AND REGULATIONS.

1. THE operations of the Societies of the two Register Books of Shipping formerly printed for the use of Merchants, Ship-Owners, and Underwriters, having ceased in the year 1834, this Society was then established for the purpose of obtaining a faithful and accurate Classification of the Mercantile Shipping of the United Kingdom, and of the Foreign Vessels trading thereto, and for the government of which the following Rules and Regulations have been from time to time adopted.

2. A Register Book to be printed annually for the use of Subscribers.

3. Each person subscribing the sum of Three Guineas per annum (or such other sum as the General Committee may fix) to be considered a Member of the Society, and entitled *for his own use* to one copy of the Register Book.

4. The subscription of Public Companies, or Public Establishments (not being engaged in Marine Insurance), to be Ten Guineas per Annum.

5. The subscription of Marine Insurance Companies to be regulated by the Committee on special application, in each case, but not to be less than Ten Guineas per Annum.

6. The Register Book to be periodically posted throughout the year.

7. For the convenience of Subscribers not resident in London, a Supplement, containing the additions to, and corrections made in, the Register Book, to be printed, fortnightly, in such convenient form, as to admit of its transmission by Post, so that such parties may be furnished, from time to time, with the latest and most complete information.

8. The superintendence of the affairs of the Society to be under the direction of a Committee of Merchants, Ship-Owners, and Underwriters: twenty-four elected in London and eleven at the principal outports. The Chairman for managing the affairs of Lloyd's, and the Chairman of the General Ship-Owners' Society, London; also the

Chairman and Deputy-Chairman of the Liverpool Committee, and the Chairman of the Liverpool Classification Committees for the time being, to be, *ex officio*, Members of the Committee.

9. Six of the Members elected in London, namely, two of each of the constituent parts of the Committee, to go out annually by rotation, but to be eligible to be re-elected. The vacancies so arising to be filled up by the election of two Underwriters and one Merchant by the Committee for managing the affairs of Lloyd's, and two Ship-Owners and one Merchant by the Committee of the General Ship-Owners' Society.

10. The Members elected at the Outports to retire at the end of every *four* years, but to be eligible for re-election.

11. The Committee to appoint from their own body, annually, a Chairman and Deputy-Chairman, and also a Chairman for a Sub-Committee of Classification.

12. The Committee to appoint a Sub-Committee of Classification, to be so regulated that each Member of the General Committee may, in rotation, take his turn of duty therein throughout the year.

13. The Secretary, Clerks, and Servants of the Society, and the Surveyors, to be appointed by and be under the direction of the General Committee.

14. Special meetings to be convened by order of the Chairman, or Deputy-Chairman, or on the requisition of any three Members.

15. All elections and appointments to be made by ballot.

16. No Member of the Committee to be permitted to be present on the decision of the classification of any ship of which he is the owner, or wherein he is directly or indirectly interested.

17. The Committee to be empowered to make such By-laws for their own government and proceedings as they may deem requisite, not being inconsistent with the original Rules and Regulations under which the Society was established; but no new Rule or By-law to be introduced, nor any Rule or By-law altered, without special notice being given for that purpose at the Meeting of the Committee next preceding that at which such Motion is intended to be made; such notice to be inserted in the summons convening the meeting. No new Rule, or alteration in any existing Rule, materially affecting the classification of ships, to take effect until the expiration of six months from the time it shall have been determined upon.

18. All Reports of survey to be made in writing by the Surveyors according to the forms prescribed, and submitted for the consideration of the General Committee, or of the Sub-Committees of Classification; but the character assigned by the latter to be subject to confirmation by the General Committee.

19. The reports of the Surveyors, and all documents and proceedings relating to the classification of ships, to be carefully preserved, and parties proving themselves to be

interested therein to have access to the same under the direction of the Chairman or Deputy Chairman.

Copies of the original reports (if the ships be already classed, but not otherwise), so far as relates to the dimensions, scantlings, fastenings, and materials, in cases where the correctness of the reports in these particulars is certified by the builders, are granted on application.

20. Foreign ships, and ships built in the British possessions abroad where there is not a Surveyor (*See also* Section 51), to be surveyed on their arrival at a port in the United Kingdom; but a due regard is to be had to the circumstance of their having been exempted from the supervision while building to which all British ships are subjected, and the character to be assigned to them is to be regulated according to their intrinsic quality, and from the best information the Committee can obtain.

21. In every case in which the Character assigned to a ship may be proposed, on survey, to be reduced, notice is to be given in writing to the Owner, Master, or Agent, with an intimation that if the reduction be objected to, the Committee will be ready to direct a special survey, on the Owner, Master, or Agent agreeing to pay the expenses attending the same, provided on the said survey there shall appear sufficient ground for the proposed reduction.

22. When the Surveyors consider repairs to be requisite, they are respectfully to communicate the same in writing to the Owner, Master, or Agent, and if such repairs be not entered upon within a reasonable time, a corresponding report is to be made to the Committee for their decision thereon.

23. Parties considering the repairs suggested by the Surveyor to be unnecessary or unreasonable, may appeal to the Committee, who will direct a special survey to be held; but should the opinion of the Surveyor be confirmed by the Committee, then the expense of such special survey is to be paid by the party appealing.

24. The Surveyors to the Society not to be permitted (without the especial sanction of the Committee), to receive any fee, gratuity, or reward whatsoever for their own use or benefit, for any service performed by them in their capacity of Surveyors to this Society, on pain of immediate dismissal.

25. The Surveyors will be directed to attend on Special Surveys of ships while building or under damage or repair, when required by Merchants, Ship-Owners, or Underwriters; the charge for which is to be regulated according to the nature and extent of the service performed. In all cases, the application for the assistance of the Surveyors must be made in writing addressed to the Secretary.

FUNDS.

26. The Funds to be under the authority and control of the Committee, and a statement of the Receipts and Expenditure to be annually printed for the information of the subscribers.

27. The following Fees to be charged to the Owners of ships prior to their vessels being classed and registered in the book:—

I.

For Entering and Classing Ships, and for Entering and Classing Ships surveyed for Continuation, or the Character A in red, or repaired for Restoration.

For each Ship ...	...	under	100	Tons	...	£1	0	0
Ditto	... of 100	Tons and under	200		...	2	0	0
Ditto	... 200	,,	300		...	3	0	0
Ditto	... 300	,,	400		...	4	0	0
Ditto	... 400	and upwards	...		...	5	0	0

II.

For Registering Repairs.

For each Ship ...	...	under	300	Tons	...	£0	10	0
Ditto	... of 300	Tons and under	500		...	1	0	0
Ditto	... 500	,,	1000		...	2	0	0
Ditto	... 1000	and upwards	...		...	3	0	0

For Re-classing Ships (except when repaired) the Characters of which have been expunged, or change of Owners.

For each Ship ...	...	under	200	Tons	...	£0	10	0
Ditto	...	of	200	,,	and above	1	0	0

Special Surveys.

28. For ships built under the special superintendence of the Surveyors (to entitle them to the distinctive mark ✠) ... ... 1s. per ton

For Surveys for damage, or for other Surveys, held at the request of the Owners, and for the Survey of Ships for Restoration, Continuation, or the character A in red, a charge (in addition to the Fee for entry) will be made, according to the nature and extent of the service performed. In cases where the caulking of ships is superintended and tested by the Surveyors, a special charge will be made, according to the tonnage of the ship. All repairs which may be required on the Surveys above referred to, must be performed under the superintendence of the Society's Surveyors.

29. Certificates of Character, of the Form No. 7, signed by the Chairman of the General Committee, or by the Chairman of the Sub-Committee of Classification, and

countersigned by the Secretary, will be granted on application, the charge for which will be as follows :—

For Ships under 200 Tons	£0	2	6	each
Ditto of 200 „ and above	0	5	0	„
Copies of original reports, as per Section 19	1	1	0	„

30. Rules, each copy, 5s.

CHARACTERS.

31. The Characters to be assigned to ships to be, as nearly as possible, a correct indication of their real and intrinsic qualities,* and to be in all cases fixed (not by the Surveyors, but) by the Committee, after due consideration of the reports of the Surveyors and such other documents as may be submitted to them, and will be distinguished as follows :—

SHIPS A

To consist of new ships, or ships Continued, or Restored. (*Vide* Sections 34, 54, 55, 57.)

SHIPS A, in Red,

To consist of ships which have passed the period assigned on the original Survey, or Continuance, or Restoration; and also of ships not having had an original character, and which are found on survey of superior description, fit for the conveyance of dry and perishable goods, *to and from all parts of the world.* (*Vide* Section 60.)

SHIPS Æ

To consist of ships which are found on Survey fit for the safe conveyance of dry and perishable goods on *shorter voyages.* (*Vide* Section 61.)

SHIPS E

Will comprise ships which shall be found on Survey fit for the conveyance of cargoes not in their nature subject to sea damage *on any voyage.* (*Vide* Section 64.)

SHIPS I

To consist of ships fit to carry cargoes not liable to sea damage *on shorter voyages.* (*Vide* Section 66.)

32. In all cases in which the application of the rules must necessarily be regulated by the ship's admeasurement, the *gross register tonnage* is to be adopted. (*See also* Section 38.)

* Ships which are not built in accordance with the principles of the Society's Rules will be marked in the Register Book thus, "[*Expl. B.S.*]," denoting that they are built experimentally, and are classed subject to being surveyed biennially.

RULES FOR CLASSIFICATION.

SHIPS A

33. Will consist of new ships and those which have not passed a prescribed age, provided they are kept in a state of complete repair and efficiency. The character A will not, however, be granted to any vessel, unless satisfactory evidence of the date and build and place where built is produced.

34. The number of years to be assigned for this Character to be determined with reference to the original construction and quality of the vessels, the materials employed, and the mode of building; and their continuance for the time so assigned to depend upon its being shown by occasional surveys (annually, if practicable) that their efficiency is duly maintained. The characters of ships A will be struck out of the Register, unless re-surveyed within a period of four years from the *date of last survey*,—or, in the case of ships exceeding the eight years' grade, within *one-half of the time* assigned. In all cases the windlass is to be examined by unhanging and stripping the wood linings within a period not exceeding one-half of that originally assigned. After the expiration of the periods prescribed (*See* Section 59), ships will be permitted to Continue in the character A, or may be Restored thereto, for a further limited period, on complying with the conditions hereinafter prescribed in Sections 54, 55, and 57.

35. New ships are to be surveyed while building, by the Surveyors to this Society, in the following three stages of their progress, or they will be liable to lose one year of the period to which they might otherwise be entitled. (*See* Section 53.) Ships intended to be built under *special survey*, must be placed under the Surveyor's inspection from their commencement, so that all parts of the timbers, deadwood, keel, stem, &c., may be examined.

First.—When the Frame is completed, timbers dubbed fair inside and outside ready to receive planking, and before any planking is wrought.

Second.—When the Beams are put in, but before the Decks are laid, and with at least two strakes of the plank of the ceiling between the lower deck and the bilge unwrought, to admit of an examination of the inner surface of the plank of the bottom.

Third.—When completed, and before the plank be painted or payed.

All Ships for which a higher character than Ten Years' A may be claimed, must be surveyed by an exclusive Officer of the Society, twice at least while building; namely, at the first and at the second stages of their progress as above prescribed. Due notice must be given by the Builder or Owner of their being ready for this additional survey.

36. A full statement, agreeably to Form No. 4, of the dimensions, scantlings, &c., of all new ships, verified by the Builder, is to be transmitted by the Surveyor, and to be kept as a record in the office of the Society.

RULES TO BE OBSERVED IN BUILDING SHIPS.

37. The whole of the Timber must be of good quality, of the descriptions shown in Table A, as applicable to the several terms of years for which ships so constructed may respectively be appointed to remain on the character A, and be properly seasoned, and free from defects. The workmanship to be well executed, and equally so for all grades. Defects in workmanship or quality of timber will involve a reduction in class, to be determined by the Committee in each case. The frame to be well squared and free from sap; each set of timbers to be frame-bolted together throughout their entire lengths. The butts of the timbers to be close, and not to be less in thickness than one-third of the entire moulding at that place, and to be well chocked with a butt at each end of the chock. In all cases the chocks are to be of a description of wood equal to the best material required by the rules for the timbers which they unite, *except the floor-head chocks*, which may be of the materials allowed by the Rules for first foothooks, provided they be *butted chocks*. In all cases in which the heads and heels of the timbers shall be *square*, in vessels intended for the twelve years' grade, a dowel (to be in diameter from one-fourth to one-third of the moulding of the timber) must be introduced into the ends of such timbers in order to connect them together. In all ships an air course must be left all fore and aft, below each set of clamps, or between the clamps and spirketting of each tier of beams, and in the hold, at each end of the ship, between the keelson and hold beam clamp, to have in addition one or two tiers of air courses for one-fifth of the entire length of the ship. In the construction of top-gallant forecastles, and poops, the timbers must be of the same materials as are required by Table A for the top-timbers of the frames of ships according to the several terms of years appointed for such ships to remain on the character A, all the said timbers to extend to the plankshеer. All the outside planking of top-gallant forecastles, and the sheerstrakes, planksheers, and spirketting of top-gallant forecastles and poops must be of the materials required by Table A for the topsides of the said ship; and the shelf and clamps of poops and top-gallant forecastles may be of the same quality as those allowed in Table A for the shelf and clamp of the upper deck. All the beams of top-gallant forecastles, and the mast beams, breast beams, and transom beams of poops, to be of the materials required by Table A for the beams of the said ships; the remainder of the beams and the water-way of the poops, and the remainder of the planking of poops and top-gallant forecastles may be of cedar, mahogany, Baltic or American red pine, pitch pine, larch, hackmatack, tamarac, or cowdie, and rock-elm for such remainder of beams only, and yellow pine or American white spruce in ships below the seven years' grade. This Rule does

not apply to raised quarter-decks, the materials of which are required to be of the same quality as those named in Table A for the main body of the ship.

38. The Scantlings of the timbers, keelson and keel, thickness of planking, &c. are not to be less than those shown in Table B.

In the inside and outside planking, waterways, plankshеers, and flat of deck of raised quarter decks, a reduction of *one-fifth* from the thickness required by the Table B for such parts in the range of the upper deck in ships with two decks, will be allowed.

The measurement of raised quarter decks is to be included in the gross tonnage for regulating all scantlings.

In the inside and outside planking, waterways, plankshеers, and flat of deck of full poops* and top-gallant forecastles, a reduction of *one-fourth* from the thickness required by the Table B for such planks in the range of the upper deck in ships with two decks, will be allowed; and in the siding and moulding of the top timbers and beams of full poops and top-gallant forecastles, a reduction of *one-fifth* will be allowed. These reductions will not be allowed where the united lengths of poop and forecastle exceed three-fifths of the entire length of the upper deck. (*See* Section 41.)

In vessels having three decks or tiers of beams, where the space under the upper deck is to be used only for the accommodation of crew and passengers, or to enclose the engine openings of steam vessels, the gross tonnage below the middle or tonnage deck, is to regulate all scantlings below this deck, but the total gross tonnage is to regulate the scantlings of keelsons, and the size of main piece of rudder. The total depth of hold in spar decked ships must not exceed thirteen-sixteenths, nor be less than twelve-sixteenths of the ship's extreme breadth.

In the construction of spar decks, the timbers must be of the same materials as are required by Table A for the top timbers of the frames of ships according to the several terms of years appointed for such ships to remain on the character A. If *all* the said timbers extend to the plankshеer, their siding and moulding may be reduced one-fourth at their heads; but if only the *alternate* timbers run up to the top height, then a reduction of one-fourth only will be allowed in their moulding at their heads, and in that case there must be a perfect covering board worked all round the ship at the middle deck; and in all cases the middle deck must be a perfect deck laid and caulked. All the outside planking, and the sheerstrakes, plankshеers, and spirketting must be of the materials required by Table A for the topsides of the said ship; and the shelf and clamp may be of the same quality as those allowed in Table A for the shelf and

* Parties desirous of making any alteration in the construction of *Poops*, with a view to diminishing the weight (but preserving the requisite strength), may submit their plans for the Committee's consideration and approval.

A plan shewing the direct

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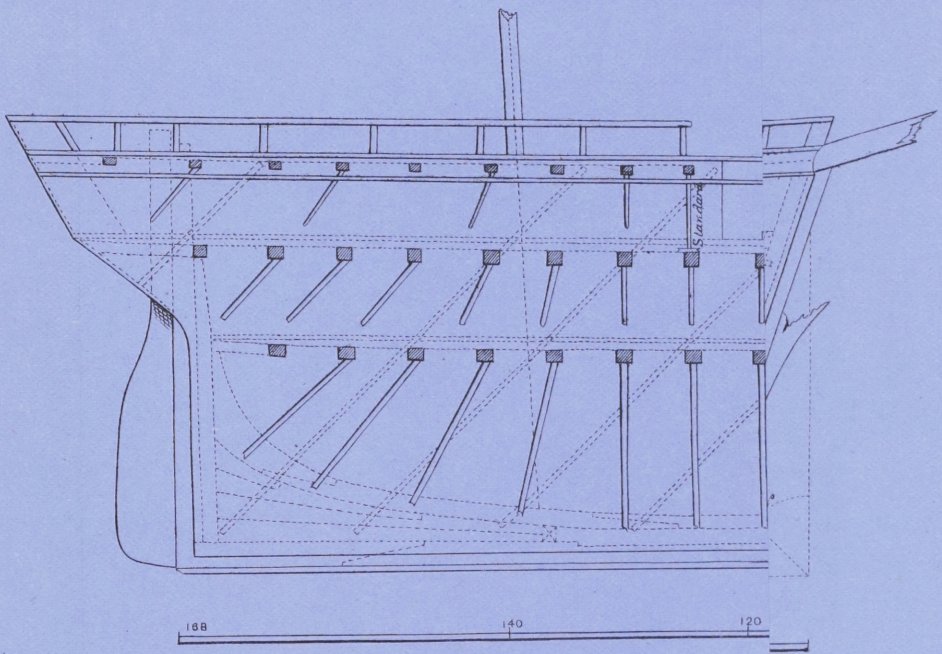
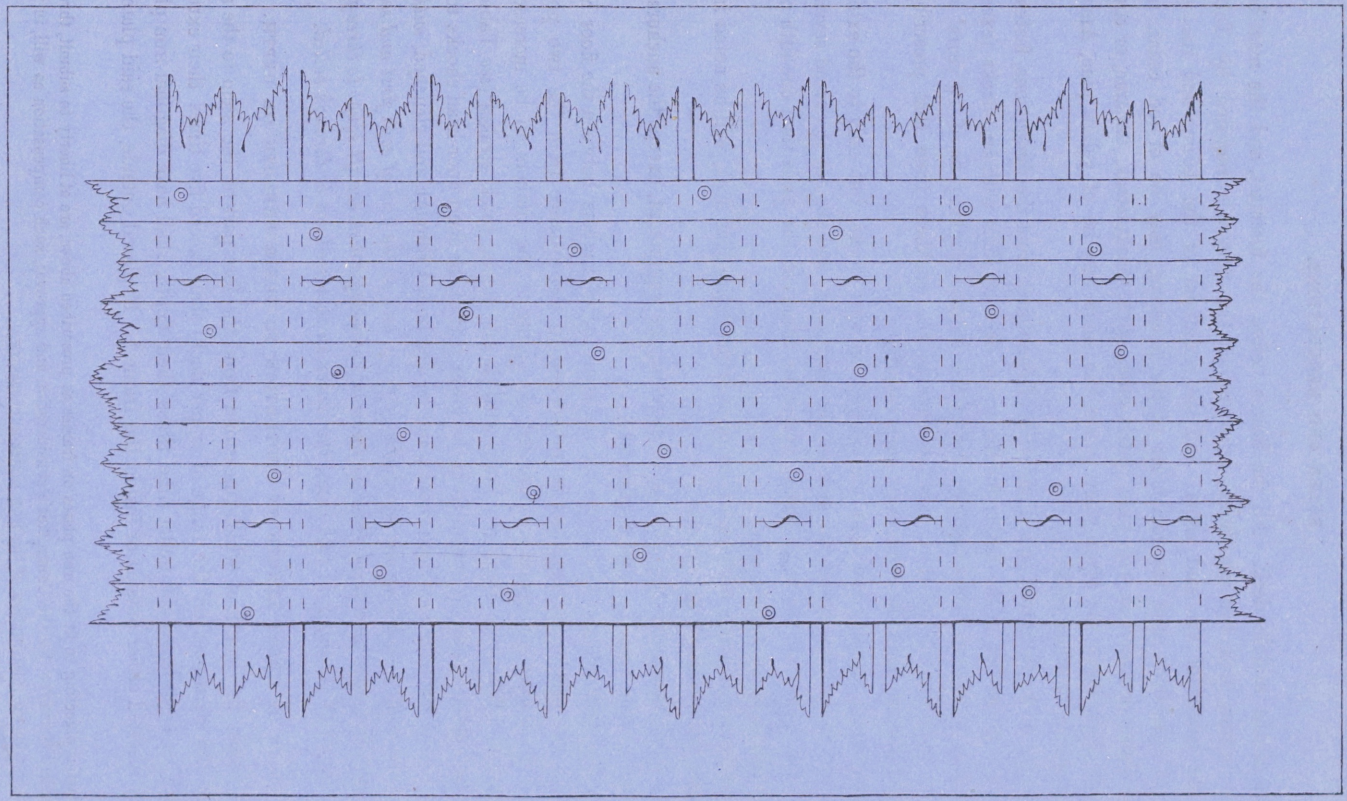


SKETCH SHOWING THE ARRANGEMENT OF THROUGH BOLTS IN THICK STRAKES OVER DOUBLE FLOORS_SECTION 39.



clamp of the middle deck. All the beams before the foremast, and the mast beams, hatch beams, and transom beam, must be of the materials required by Table A for the beams of the said ships; and the remainder of the beams and the waterway of spar deck, and the remainder of the planking, may be of red cedar, mahogany, Baltic or American red pine, pitch pine, larch, hackmatack, tamarac, or cowdie; and in ships below the seven years' grade, the same may be of yellow pine, American white spruce, or white cedar.

In spar decks there may be a diminution of one-fourth from the dimensions, fastenings, and bolts prescribed in the tables for the upper deck of ships with two decks (except in the siding of the spar deck beams); but if the outside planking be of 12 years' wood, then a reduction of one-third may be made in the thickness from that prescribed in Table B for the main sheerstrakes of such vessels.

Deckhouses or other erections are allowed on spar decks, but only to the extent of one-tenth of the total superficial area of the spar deck, and are not to exceed seven feet in height. They are not to be placed nearer to either of the ends than one-fifth of the entire length of the vessel.

Vessels to which this rule applies, as regards an entire spar deck, will be noted in the Register Book thus—"*Spar decked.*"

The *total tonnage* of the ship is to regulate the equipment, except the anchors and chains for steam vessels.—(*See* Section 81.)

39. The intermediate dimensions for the scantling of timbers between the floor heads and the gunwale to be regulated in proportion to the distance from the two points. Should the timber and space be increased, the siding of the timbers to be increased in proportion. Whenever ships are built with double floors, thick strakes (*see* Table B) must be worked inside, to extend from the lower part of the short floor-head chocks to the upper part of the long floor-head chocks, and be well bolted through and clenched, *with one bolt at the head of each long and short arm of floors, and at the heel of each first and second foothook which come upon them, from the foremast extending a distance aft equal to three-fifths of the length of the ship; in such cases, the limber strakes need not be through bolted.*

SHIPS OF GREAT LENGTH IN PROPORTION TO THEIR BREADTH OR DEPTH.

All ships, the length of which (measured from the fore part of the stem to the after part of the stern-post on the range of upper deck) shall exceed five times their extreme breadth, or eight times and under nine times their depth, shall have diagonal iron plates closely inserted either outside or inside the frame.* If placed outside, the said plates to

* Parties objecting to fit the iron plates on frames as prescribed above, are at liberty to submit, through the resident Surveyor, for the Committee's consideration and approval, such compensation as will, in their opinion, render the introduction of the iron plates unnecessary.

extend from the upper side of upper tier of beams to the lower part of chocks at first foothook heads amidship, and to the same perpendicular height forward and aft, measured from the lower part of the keel; and if placed inside, the plates are to extend from the upper side of upper tier of beams to the lower part of chocks at *floor heads*. Whether placed outside or inside, the sizes of the plates not to be less than as follows, viz. :—

In ships of	100	tons and under	200	tons	...	$3\frac{1}{2}$ by $\frac{7}{16}$ in.
„	200	„	400	„	...	4 by $\frac{1}{2}$ „
„	400	„	700	„	...	4 by $\frac{5}{8}$ „
„	700	„	1000	„	...	$4\frac{1}{2}$ by $\frac{3}{4}$ „
„	1000	„	1500	„	...	5 by $\frac{3}{4}$ „
„	1500	and above	...	...	...	$5\frac{1}{2}$ by $\frac{7}{8}$ „

and to be fastened with bolts, one at each alternate timber if outside, and one at each timber if inside, not less in diameter than the sizes given for "through butt bolts" in Table D.

The number of plates to be in proportion of not less than one pair to every twelve feet of the ship's entire length taken as above, but not to be more than eight feet asunder measured on a square; the said plates are to be placed diagonally, at an angle of not less than 45 degrees, their lower ends pointing to the after end of the keel in the after body, and to the fore end of the keel in the fore body, four pairs crossing each other amidships.

All such ships to have shelves and waterways to each tier of beams, each equal in contents to the transverse sectional area of the beams of their respective decks at their ends; each of the said shelves and waterways to be bolted through the outside planking at every timber, with bolts of the sizes given in Table D; likewise the shifts of inside and outside planking not to be less than 6 feet, unless there be a strake wrought between them, and then a distance of 5 feet will be allowed.

In ships the length of which shall exceed *six* times their extreme breadth, or nine times and under ten times their depth, the number of plates must be not less than one pair to every *ten* feet of the ship's entire length taken as above, but not to be more than six feet asunder measured on a square, and to be placed diagonally as above described.* And in addition to the requirements for ships of five times their breadth in length, such ships must be fitted with a rider keelson, or a pair of sister keelsons, at the option of the Owner, the transverse sectional area of such rider keelson or sister keelsons each to be equal to two-thirds of that required in Table B for main keelsons. If a rider keelson be adopted

* In cases where the length of the Ship exceeds ten times the depth, the builders or owners are to submit, through the resident Surveyor, for the Committee's approval, their plans for giving the vessel the necessary strength longitudinally.

it is to be fastened with a through bolt (of the size required in Table D for keelson bolts), in every frame; or if the Owner prefers it, every intermediate bolt may be short, passing only through the main and rider keelsons.* If sister keelsons be fitted, they must be fastened with through bolts, in number not less than one in every alternate timber, and of the size required in Table D for "scarphs of keels," &c.

40. The sizes of the deck and hold Beams have been regulated so as to be determined by the length of the beams *amidships*, as shewn in Table C. The beams will be required to be of the size of the midship beam, except those at the *after end* of the ship, which may be reduced in proportion to their length. If beams of spruce or yellow pine are used, the siding of such beams shall be one-fourth larger than is prescribed by the above Table, or be increased each way, siding and moulding, equal in area to that amount.

In cases where Iron Beams are fitted in Wood Ships the Beams of each deck are to be one-eighth of an inch thicker than is required by the rules for Ships built of Iron, in consideration of the greater space between; and the depth of lower deck or hold beams is to be increased one inch. The spaces between beams of the several decks not to exceed the spaces at present allowed for wood ships, as per Rule, Section 41. Each tier of beams must have stringer plates rivetted on their ends, and tie-plates fore and aft, on each side of the hatchways, in accordance with the Rules for Iron Ships, Sec. 15, and to be of the dimensions required in Table G, or of strength equal thereto. Parties are to submit, through the resident Surveyor, their plans for attaching Iron beams to the Ship's sides, for the Committee's approval.

41. The beams of all Decks to be in number and size, as hereinafter specified, and be securely fastened to the sides either with lodging-knees of iron or wood, or with a shelf-piece and water-ways,† or with a shelf-piece and knees, or with some other security equal thereto; and, in addition, all ships of 150 tons and above to have vertical knees to the DECK beams; and those of 200 tons and above to have vertical knees to the HOLD beams, in number as shewn in Table E. Vessels of 13 feet, and under 15 feet hold, the spacing of the hold beams not to exceed 8 feet apart, and the deck beams 4 feet:—Vessels of 15 feet and under 18 feet hold, the spacing not to exceed 8 feet and 4 feet apart alternately, or in that proportion; the deck beams to be placed one over every hold beam, and one in all

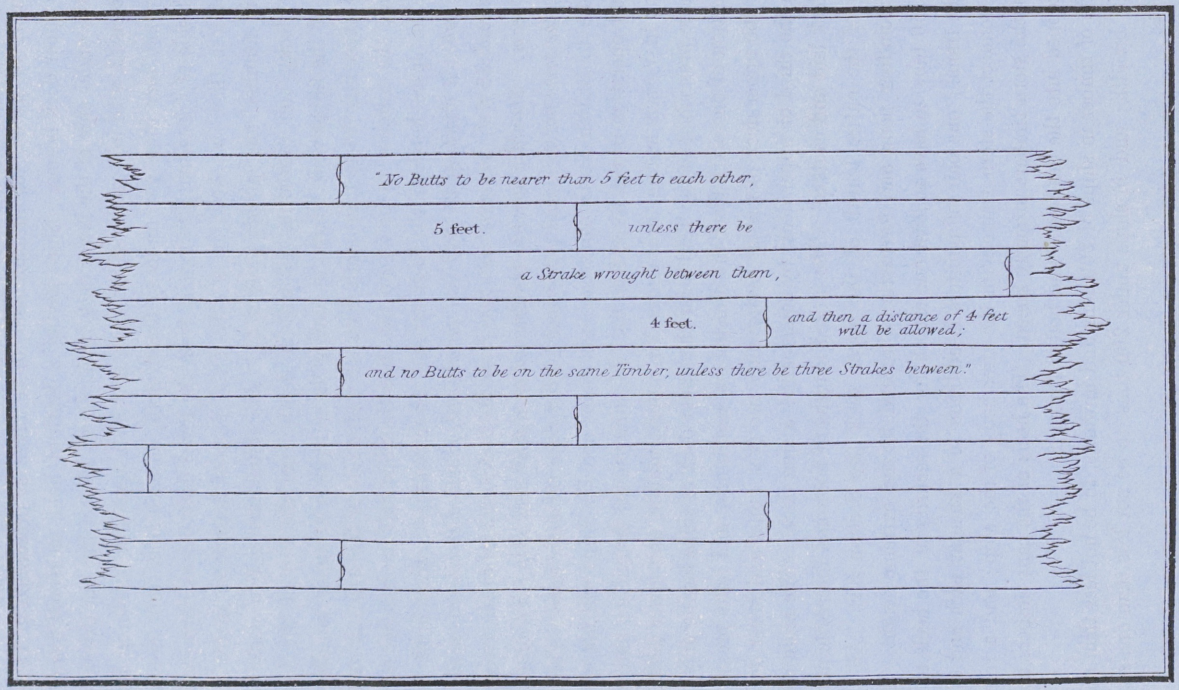
* In all cases in which a rider keelson is fitted, it must be fastened as prescribed above, irrespective of the relative dimensions of the ship.

† When the transverse sectional area of the shelf-pieces and waterways are each equal in contents to the transverse sectional area of the beams of their respective decks at their ends as given in Table C, and the beams are either dowelled or dovetailed to their shelf-pieces and waterways, and the shelves and waterways are properly shifted, scarphed, and through bolted, having also a hanging knee to the lower side of every beam end, then lodging-knees may be dispensed with, except in the mast-rooms. In Ships of 500 tons and under, where lodging-knees properly bolted are applied, the ordinary plank-clamps may be used, but the through bolting of them at alternate timbers, as per Table B, cannot be dispensed with.

double spaces :—Vessels of 18 feet hold and above, the spacing of the beams not to exceed 4 feet 6 inches; the deck beams to be one over every hold beam. The depth in all such cases to be determined by taking the measure from the top of the limber-strake (the thickness of which, for measurement, to be taken as prescribed in Table B) to the top of the upper deck beams. Ships having a depth of hold, measured from the limber-strake to the under side of the lower deck beam, above 13 feet but not exceeding 15 feet, must be secured with iron riders of the sizes, and be fastened, as shown in Table F, and in number not less than one on every fourth floor, on each side, from fore side of fore-mast to aft side of mizen-mast, to extend from the lower deck beams downwards so as to receive not less than two bolts in a substantial part of the floors; or by orlop beams, sufficient in number and properly secured. All ships having two decks (viz. upper and lower deck), and exceeding 24 feet in depth from the top of the limber-strake to the top of the upper deck beams, or having three decks (viz. upper, middle, and lower deck), and exceeding 24 feet in depth from the under side of the MIDDLE DECK, to have orlop beams, the number to be in no case less than one-half the number of lower deck beams in the space between the foremast and the mizen-mast, *except in the case of flush deck ships, when a depth of* 25 *feet will be allowed, provided in either case the lower hold does not exceed* 15 *feet, measured as above from the limber-strakes to the under side of the lower deck beam. Should a house be constructed on a flush deck ship for lodging crew or for store-room, the same not to extend aft beyond* 10 *feet from the mizen-mast.* The application of this Rule to British North American built Ships and Fir Ships will not exempt them from the full operation of the Rule, Sec. 62. All dimensions, fastenings, and bolts of the middle deck in Vessels having three decks (viz. upper, middle, and lower deck), to be the same as those prescribed in the Tables for the upper deck of ships having only two decks; and a reduction of one-sixth from the dimensions, fastenings, and bolts prescribed in the Tables, for the upper deck of vessels having only two (viz. upper and lower deck), will be allowed in the third or upper deck, by some called a spar deck. The middle deck to be a perfect deck laid and caulked. The united lengths of poop and forecastle not to exceed three-fifths of the entire length of the upper deck (*see* Section 38). All timbers of the frame including poop and forecastle to extend to the extreme height. Every ship exceeding 150 tons to have at least one crutch for the security of the heels of the after-timber of the frame; one pair of pointers in addition to a knee at each end of the wing transom to connect the stern frame with the after-body of the ship; and a transom over the heels of the stern timbers properly kneed. The heels of the cant timbers forward and aft to be stepped into the deadwood and bolted through.

42. Shifts of timber in ships of 200 tons and upwards, to be not less than one-seventh of the main breadth; and in ships under 200 tons, to be not less than one-sixth of the main breadth.

SKETCH DESCRIPTIVE OF THE REQUIRED SHIFTING OF PLANK.—Section 45.—(See also Section 39.)



The Sketch shews the principle on which the Butts should be arranged, so as to avoid Stepping, which is deemed bad Workmanship.

PLANK.

43. The outside planking to be of good quality, of the description prescribed in Table A, to be clear of sap and free from all defects.

44. The inside planking to be of the description shown in Table A, and free from all foxy, druxy, or decayed knots. With regard to the ceiling plank, and the efficiency of its fastening, it will be required that the planking shall be properly shifted and fastened so that there shall be at least either treenails or through bolts, or short bolts, in each plank of the ceiling *in every timber.*

45. No butts to be nearer than 5 feet to each other (*see also Sec.* 39), unless there be a strake wrought between them, and then a distance of 4 feet will be allowed; and no butts to be on the same timber, unless there be three strakes between, as more particularly shown in the diagram annexed (*see Plate*), but vessels under 200 tons will be exempted from the full operation of this rule; and in ships of larger tonnage a literal compliance with it will be dispensed with in cases wherein it may be satisfactorily proved that the departure from the rule is only partial, being confined to the ends of the ship, or the planking of the topside, and does not injuriously affect the ship's general strength; but such relaxation will not be sanctioned unless an accurate description of the shifting of the plank be transmitted by the Surveyors, to enable the Committee to form a proper judgment on the case.

The thickness of the plank, according to the tonnage of the ship, is not in any instance to be less than is prescribed in Table B.

The breadth of the wales in every case is to be regulated as under, viz.:—

When the extreme length of the ship, measured from the fore part of the stem to the after part of the stern-post on the range of upper deck, is six times her depth of hold (and under), the wales are to be in breadth 3 in. to every foot of the depth of hold.

When the extreme length of the ship is eight times her depth of hold, the wales are to be in breadth $3\frac{1}{2}$ in. to every foot of the depth of hold.

When the extreme length of the ship is ten times her depth of hold (and above), the wales are to be in breadth 4 in. to every foot of the depth of hold.

And other intermediate dimensions in these proportions.

FASTENINGS.

46. Treenails to be of good quality, and of a description equal to the best material through which they pass; if, however, in Ships built in the British North American Colonies, or of Fir, treenails be used of materials not inferior to those comprised in line No 2 in Table A, including Locust and all Australian and tropical hard

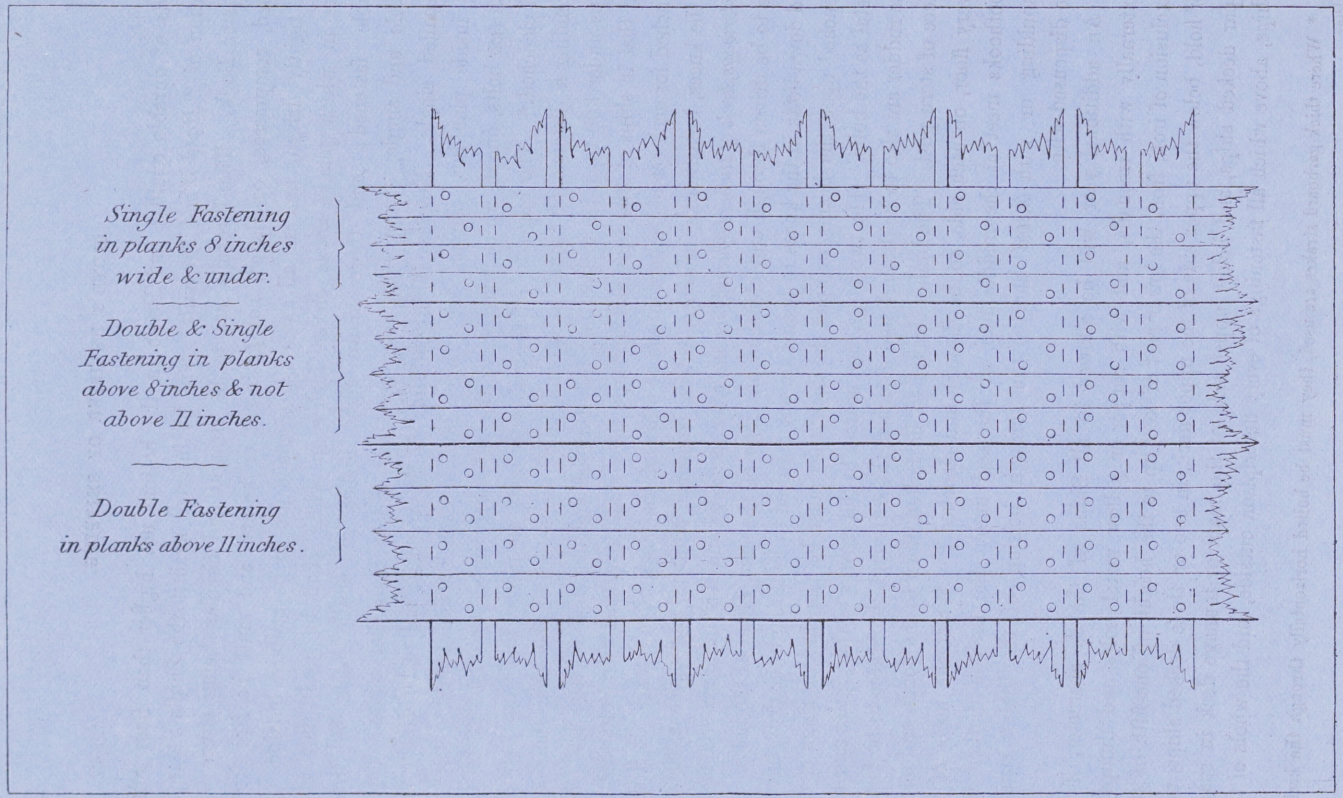
woods of durable quality, and Beech in the bottom not higher than floor heads, a notation of "*Hard Wood Treenails*" will be inserted against the Ship's name in the Register Book. The Treenails are to be straight and circular, being either engine-turned, compressed, or planed, not grain-cut or knotty, and must be free from sap and tightly driven, and in all cases the treenails are to be caulked outside. In all cases in which planks above eleven inches in width shall be used, they must be double fastened; and those above eight inches in width must be treenailed double and single, except bolts intervene; and if less than that width, then to be treenailed single. Not less than two-thirds of the treenails are to be driven through the inside planking, clamps, &c. Every butt in each outside plank to be fastened with *two* bolts, one of which may be in the adjoining timber, and one to be through and clenched.* The bilges to be secured with bolts so placed that from the foremast, extending a distance aft equal to three-fifths of the length of the keel, there shall, in ships under 300 tons, be at least one bolt through and clenched in each first foothook; and that in ships of 300 tons and upwards there shall be at least TWO bolts through and clenched for each set of timbers in one or other of the thick bilge strakes. All the bolts of the knees, breasthooks, crutches, riders, transoms, pointers, and keelsons, shelf pieces, *waterways, heels of timbers against fore and after deadwood*, and of all other material fastenings, are to be driven through and clenched on rings of the same metal as the bolts. The up and down bolts in the knees to beams are not required to be through the deck, but whether clenched upon the beams, or upon the deck, they must be clenched on rings of the same metal as the bolts. The two bolts, the nearest to the crowns of the pintles and braces of the rudder are also to be through and clenched, those through the braces to be in the main piece of stern post. The limber strakes to be bolted down to the floors, and one bolt in every floor, on each side, to be through and clenched.† When the heels of the first foothooks meet at the middle line on the keel under the keelson (either with full moulding or with *butted* chocks) the through bolting of the limber strakes may be dispensed with.

An additional year will be allowed to all Ships of the A character, if fastened externally with treenails, and with copper or yellow metal bolts and dumps, to the exclusion of iron, from the lower part of keel up to the height of one-fifth of the depth of hold, below the upper side of the upper deck, in two or three decked ships, not being spar decked ships, and below upper side of the main or tonnage deck in spar decked ships, above which all fastenings of every description outside, and the whole of the inside

* Where thick garboard strakes are used, they must be bolted horizontally through the keel and each other.

† Watercourses are to be properly formed at underside of all floors and foothooks at the limbers on each side of middle line, so as to allow water to reach the pumps freely.

SKETCH SHOWING THE PROPER ARRANGEMENT OF TREENAILS OR BOLTS_SECTION 46.



fastenings must be properly galvanized, *except the frame bolts, and the bolts in iron straps on timbers, otherwise admitted of iron.*

And two years will be added to the A character if, in lieu of treenails above the floor heads, the whole of the planking is fastened with bolts of copper, or yellow metal to the above-named height, and above such height with properly galvanized iron bolts. All inside fastenings hitherto admitted of iron, including all frame bolts, and bolts in iron, straps on timbers, or between two thicknesses of outside planking, must also be properly galvanized.

In all cases of Ships claiming extra time on the A character, the chain and preventer bolts are to be of properly galvanized iron, but the bolts in heels of timbers abutting against deadwood, forward and aft, must be of copper or yellow metal.

In all such cases of substitution, the bolts, must be in number the same as is already prescribed above for treenails; the proportion of through bolts must be at least *two-thirds;** and all the through bolts must be of malleable metal, and clenched on rings (of the same metal) inside. The sizes of the copper or mixed metal bolts must be as under, *viz.*:—

In ships of 150 tons and under 200 tons	...	...	...	$\frac{5}{8}$in.	}	Smaller sizes must not be used.
200 ditto 350	...	...	...	$\frac{3}{4}$in.		
350 ditto 500	...	...	...	$1\frac{3}{16}$in.		
500 ditto 700	...	...	...	$\frac{7}{8}$in.		
700 ditto 900	...	...	...	$1\frac{5}{16}$in.		
900 and above	...	...	...	1in.		

and the lengths of the short bolts not less than as follows, *viz.*:—

When used in plank of $2\frac{1}{2}$ inches, to be 7 inches long
3 „ 8 „
4 „ 10 „
5 „ 12 „

and so on in proportion for plank of other thicknesses. The sizes of the bolts required in the several parts must not be less than is shown in Table D.

47. In every case where the butt and bilge bolts are not through and clenched, One Year will be deducted from the period which would otherwise be assigned in the classification of the vessel.

48. The Scantlings and dimensions for all sized vessels to be proportionately regulated, agreeably to Table B.

49. Ships surveyed while building, in which *all the materials required for a Twelve Years' Ship shall have been used*, and most of the other requisites for that grade fulfilled,

* Whenever *metal fastenings* are used in lieu of Treenails, this proportion must be observed.

but which, from partial deficiencies, may not appear to be in all respects entitled to the full period, although superior to the description of a Ten Years' ship, may be marked in the book thus, 11 A; thereby denoting that they are to remain on that grade *Eleven Years*, provided they be kept in a state of efficient repair.

50. Ships surveyed while building, in which every *alternate* set of timbers are frame-bolted together throughout their entire lengths, and the scantling and shifts of the timbers, the thickness and shifts of the planks, and size of fastenings may be the same as are required by the Rules, and in which the chocks are wrought with a butt at each end, and the description of materials prescribed in Table A shall also have been used, but in which the frame is not so well squared as is required for Twelve Years' ships, but which shall be *in other respects* equal thereto, shall be marked 10 A; thereby denoting that they are to remain on that grade for *Ten Years*, provided they be kept in a state of efficient repair.

51. In all other cases, ships surveyed while building, and constructed of the materials of good quality, hereinafter shown in Table A, will be allowed the several terms of years respectively appointed, provided they be kept in a state of efficient repair. All ships, *not built under Survey*, whether in the United Kingdom or abroad, for which a character may be claimed, must be placed in dry dock or laid on blocks in order that their bottoms may be seen and properly examined; they will also be required to have *their timbers completely exposed for examination, by a plank or listing* AS THE SURVEYOR (who must be an exclusive officer of the Society) MAY DIRECT, *being taken out, either inside or outside*, all fore and aft, *on both sides, equal to one entire strake*, at the first foothook heads, and another between decks, *and a few treenails must likewise be driven out*, so that the Surveyors, from actual inspection, may be satisfied whether or not they are of the quality and make prescribed by the Rules; and the same being thus ascertained, shall be reported to the Committee, and a character assigned. If the ship be 400 tons and upwards, the Survey must be made by two Surveyors, and their report signed accordingly.

52. Ships built under a substantial and efficient roof, kept in good repair, *which shall project at each end beyond the length, and on each side beyond the breadth, a quantity equal to half the breadth of the vessel*, shall have one year added to the period prescribed, provided they shall have been surveyed whilst building, and shall have occupied a period of not less than twelve months in their construction, *and in which no plank, except as follows, shall have been worked until the expiration of at least three months after the frame was completed*, viz.:—not more than three strakes of bilge planks, and two strakes of outside plank in the way of each tier of beams, also the clamps inside, so that the beams may be put in their places.

53. Ships built in the United Kingdom;—or in Quebec after 1851;—or St. John,

New Brunswick after 1853;—or Miramichi, and Northern Ports of New Brunswick, or in Prince Edward Island after 1855, or in Nova Scotia after 1864;—and *not surveyed while building* by the Surveyors to this Society, and all ships, the Owners or Builders of which may have refused or declined to permit them to be surveyed at the several periods prescribed by the Rules, will have One Year deducted from the period which would otherwise have been assigned, in consequence of their not having been submitted to suvery during their construction. In no case, however, will a higher grade than 10 A be assigned to ships built in the United Kingdom which shall not have been surveyed while building.

CONTINUATION OF SHIPS A.

54. If, on the termination of the period of original designation, or if at any subsequent period, not exceeding one-third of the number of Years assigned originally, or on Restoration, an Owner should wish to have his ship remain, or be replaced on the letter A (*vide* Section 59), he is to send a written notice thereof to the Secretary, and the Committee shall then direct a Special Survey, as follows, to be held by not less than two competent persons to be appointed by the Committee, one of them to be a Surveyor, the exclusive officer of the Society:—

SURVEY.—No. 1.

The ship to be either placed in dry dock or laid on blocks, so that the keel may be examined, and be scraped or dubbed bright from the light water-mark upwards, including the planksheers and waterways, so as to expose the surface of the plank to view.* A listing, 4in. wide to be cut out of ceiling at each end of the hold on both sides, one-fifth the entire length of the ship between the keelson and air course under hold beam clamp. Bolts, if of iron, in number not less in any case than six on each side,

* If the Ship has been sheathed with wood over felt, fastened with copper or mixed metal nails, within a period of five years, and the plank from the light water-mark upwards shall, when so sheathed, have been brightened, and the condition of the bolts, planking, treenails, and caulking ascertained, and favourably reported upon by the Surveyors; and provided that the sheathing which covers the binding bolts and raft ports, and a strake of sheathing all fore and aft on each side under the wales be removed, and listings of sheathing cut out at hood ends; and the planking, fastenings, and caulking so exposed, shall prove to be in good condition; then, on application to the Committee, the stripping from the light water-mark upwards, may be dispensed with; but whenever the sheathing is removed, the outside planking is to be scraped or dubbed bright, and examined as prescribed by the above rule.

If the ship has been sheathed with metal within a period of two years, and it shall appear to the Surveyors that stripping from the light water-mark upwards may be dispensed with, the case will receive due consideration on application to the Committee.

in each range of deck fastenings to be driven out in ships of 500 tons and under, and increased in number in proportion to the size of the ship, and one treenail to be driven out in every alternate frame or fourth timber between the upper edge of the wales and planksheers, and one in every alternate frame or fourth timber between the upper edge of the wales and the light water-mark, and at such other parts at the bottom as the Surveyors may direct, so as to enable a judgment to be formed as to the general state of the treenails, timbers, and of the planking in the treenail holes. The hold to be cleared, and proper stages to be made *both inside and outside.* All air courses and the limbers to be cleared for the examination of the timbers. The windlass to be unhung, and the wood linings stripped. The attention of the Surveyors should then be particularly directed to the state of the upper or main deck and comings, the upper and lower deck bolts, whether of iron or copper, and the outside planks through which they pass, the planksheers, waterways, and beams, so far as they can be examined; the hawse timbers, knight-heads, breasthooks, and transoms; the floors and keelsons; the keel, rudder, and windlass; the planking outside and inside, and the treenails; and the frame and inner surface of the outside planking, where they can be seen; and the sheer and general form of the ship; the condition of the oakum and caulking also to be ascertained, and the ship to be efficiently repaired with suitable materials, as hereinafter stated. Anchors, cables, and general equipments to be attended to as prescribed in Sections 71 to 76.

In British North American built Ships and Fir Ships where the middle line bolts are of iron, their condition is to be ascertained, and if this be not practicable, additional bolts of sufficient size must be driven through the keelson, floors, and keel, in each alternate frame, also through the stem, apron, sternpost, and deadwood.

The Surveyors shall transmit to the Committee a detailed report, accompanied by such observations as may occur to them, from inspection of the ship, or from information of the repairs she may have received. If, from the report of such special survey, the ship shall appear to be in a sound and efficient state, the Committee shall continue such ship on the letter A for such further period as they may think fit, not exceeding, however, one-third of the number of years which had been originally assigned, *subject to the usual annual survey.* Ships classed A for four years, will be allowed a Continuation for Two Years, provided that, in addition to the above requisitions, the Owners shall have removed a strake in the topsides, fore and aft, on both sides; this, however, will not exempt ships built in the British North American Colonies from the operation of the Rule, Section 63. Ships so Continued shall be distinguished in the Register Book by the number of years for which the character is extended, being inserted separately under the number assigned on the original character, thereby denoting that the ship has been found on survey in such good and efficient order as to entitle her to be Continued for years. The period assigned for Continuation will, upon all occasions, commence from the time the

ship may have gone off the letter A, without regard to the date when the survey for this purpose may have been held.

SURVEY.—No. 2.

But should a Ship Owner at the period for Continuation as above described be willing to subject his ship to the following Survey, the Committee will Continue such ship for a longer time, viz., not exceeding two-thirds beyond the term originally assigned, provided application be first made to the Committee for such survey.

And for the purpose of holding such survey, the ship must be placed in dry dock or laid on blocks upon ways, so that the keel may be examined; all sheathing to be entirely stripped off the bottom and elsewhere; all the outside planking from light water-mark upwards, including the planksheers and water-ways, to be scraped or dubbed bright; all the air courses and the limbers to be cleared; the timbers of the frame to be further exposed to view by the removal of planking equal to one strake fore and aft, on each side above the wales; a short plank in each buttock; a strake of planking to be removed, or listing of sufficient breadth, not less than 4 inches, all fore and aft, on each side, at the discretion of the Surveyor, in the ceiling above the floor heads (or, if the Ship-owner should prefer it, a strake of planking outside at the same height), and a reasonable number of treenails, in addition to those above named, so as to ascertain the state of the lower timbers of the frame; and in order to ascertain the condition of the beam ends, either a strake of deck next the water-ways on each side to be taken out, or an examination to be made by boring each end, at the option of the Ship-owner; iron bolts and treenails to be driven out at the various parts as prescribed in Survey No. 1; proper stages to be made both inside and outside; the windlass to be unhung, and the wood linings stripped; and when in the state above described, the special survey to be held, as directed in Survey No. 1, upon all the parts exposed to view; the condition of the oakum and caulking to be ascertained; the ship to be efficiently repaired with suitable materials, as hereinafter stated.

The Surveyors on these points shall transmit to the Committee a detailed report, accompanied by such observations as may occur to them, from inspection of the ship, or from information of the repairs she may have received. If, from the report of such Special Survey, the ship shall appear to be in a sound and thoroughly efficient state, the Committee shall Continue such ship on the letter A for such further period as they think fit, not exceeding, however, *two-thirds* of the number of years which had been originally assigned. Ships so Continued, shall be distinguished in the Register Book by the number of years by which the character is extended, being inserted separately under the number assigned on the original character, thereby denoting that the ship has been found on survey in such good and efficient order as to entitle her to be Continued for years. The period assigned for Continuation will, upon all occasions,

commence from the time the ship may have gone off the letter A, without regard to the date when the survey for this purpose may have been held.

In cases of the repair of ships for Continuation of character under the Rules, Section 54, materials of an inferior description (but not below those prescribed for the six years' grade) may be permitted to be used in those parts which must of necessity, under the operation of the Rules, Section 56, be *entirely removed* on a repair for Restoration; subject, however, to the Ship Owner, in every instance, making a special application to the Committee for their previous sanction.

SURVEY.—No. 2.

FOR BRITISH NORTH AMERICAN BUILT SHIPS AND FIR SHIPS.

To entitle such ships to Continuation for a period of two-thirds that originally assigned to them, they must, in addition to the examination prescribed above, be doubled diagonally from the keel to above the first strake of lower deck spirketting. The doubling to be of the thickness, and be fastened as prescribed in Section 68; or, if the Owner objects to double his ship, she may be submitted to the following survey, viz.: —The ship must be placed in dry dock or laid on blocks upon ways, so that the keel may be examined, and proper stages made both inside and outside; all sheathing to be entirely stripped off the bottom and elsewhere; all the outside planking from the lower part of chocks at floor heads upwards, including the planksheers and waterways, to be scraped or dubbed bright; the timbers of the frame to be exposed to view by the removal of the planksheer or of planking equal to one strake fore and aft on each side, above the wales (either inside or outside, at the discretion of the Surveyor), also a strake outside all fore and aft between the wales and light water-mark, a short plank in each buttock, and planking or listing of sufficient breadth on each side, at the discretion of the Surveyor, in the ceiling above the floor heads all fore and aft (or if the Ship-owner should prefer it, planking outside equal to one strake at the same height), and in order to ascertain the condition of the beam ends, a strake of deck next the water-ways on each side is to be taken out; and a sufficient number of treenails to be driven out from various parts of the bottom, so as to ascertain their condition, and that of the planks and timbers through which they pass; the windlass to be unhung, and the wood linings stripped, and when in the state above described, the special survey to be held upon all the parts exposed to view; the condition of the oakum and caulking to be ascertained, the *treenails from the upper part of chocks at second foothook heads to the lower part of chocks at floor heads to be renewed with through treenails of hardwood for at least half the length of the ship amidships*, unless they

are already of hardwood and prove to be in good condition; and where the middle line bolts are of iron their condition is to be ascertained, and if this be not practicable, additional bolts of sufficient size must be driven through the keelson, floors, and keel in each alternate frame, also through the stem, apron, stern post, and deadwood; and if the ship in other respects be efficiently repaired with suitable materials, she will be allowed Continuation for a period not exceeding *two-thirds* of the term of years originally assigned, subject to annual survey.

RESTORATION OF SHIPS TO THE CHARACTER A.

First Rule.

55. If, at any time before the expiration of two-thirds of the number of years *beyond* the period originally assigned, an Owner be desirous to have his ship Restored to the A character, such Restoration (on his consenting to the special survey hereinafter described, to be held by two Surveyors, and performing the repairs found requisite) will be granted for a period not exceeding two-thirds of the time originally assigned, the same to be calculated from the date of such repairs.

Requisites for Restoration.

56. All the bolts in the range of each deck to be driven out, and the planks taken out; the upper deck waterways, and planksheers and spirketting, and the strake next the waterways on the lower deck in the midships, to be taken out;* the sheathing to be entirely stripped off the bottom; *all the outside planking from the light water-mark upwards, to be scraped bright;* a strake in the upper course of the bottom, between the wales and the light water-mark fore and aft, and a plank in the ceiling at the floor heads on each side, to be taken out, the limbers to be clear, and the hooks forward to be

* In the case of ships fastened with copper or yellow metal, and galvanized iron, in conformity with the Rule, Section 46, where there is no poop or forecastle, if the whole of the planksheer and spirketting of upper deck and outside planking equal to one strake all fore and aft be removed in way of fastening bolts to each tier of beams, below the upper deck beams; and where there *is* a poop and forecastle, then if the whole of the planksheer and spirketting of poop, forecastle, and waist, and a strake of outside planking (in way of fastening bolts to upper deck beams), the entire lengths of the poop and forecastle, and outside planking equal to one strake all fore and aft be removed in way of fastening bolts to each tier of beams below the upper deck beams; and in all cases a strake of deck next the waterway of each deck, on both sides, be removed, also the throat bolts of all knees, together with the other requisitions relating to the bottom, ceiling, &c., the further removal of fastenings, bolts, and planks, may, under the sanction of the Committee, be dispensed with, provided their condition be carefully ascertained and favourably reported upon by the Surveyors.

The above relaxations, so far as they relate to the removal of plank and fastenings in the range of the lower deck, will be extended to all ships in which all the lower deck fastenings are of copper or yellow metal.

exposed; the windlass to be unhung, and the wood linings stripped; and in that state the ship to be submitted to a special survey and examination, at which the attention of the Surveyors appointed by this Society is to be particularly directed to the state of the decks, the remaining plank of the topsides, the wales, upper courses, and treenails, and other fastenings; also to the state of the frame, hawse timbers, and knightheads, keelson, floors, foothooks, ceiling, and breasthooks, the rudder in all its parts and hangings.

If, after the above examination, the Owner should consent to take out all planks, timbers, beams, knees, waterways, fastenings, and other parts that may be found defective, or objected to, and replace them with materials of the same species, or of equal quality with those of which the ship was originally constructed, such ships to be entitled to Restoration for a period proportionate to their real condition and the extent of the repairs performed; or if timber of an inferior description, or second-hand English or African Oak or Teak be used, then for a period not exceeding that for which such materials would have entitled a new ship to stand A according to the Tables, subject in either case to the ship being at all times thereafter kept in a state of efficient repair.

Second Rule.

57. If, *at any age* of a vessel, an Owner be desirous to have his ship Restored, such Restoration (on his consenting to the special survey hereinafter described, to be held by two Surveyors, and performing the repairs thereby found requisite) will be granted for so long a period as may be deemed expedient by the Committee, not exceeding, in any case, the term of eight years.

Requisites for Restoration.

58. The whole of the outside plank of the vessel to be taken off as low as the second foothook heads. The remainder of the planking, either outside or inside, together with all the decks, to be removed, *so as to expose the timbers of the frame entirely to view*, the windlass to be unhung, and the wood linings stripped, and in that state the ship to be submitted to a special survey and examination, by the Surveyors appointed by this Society; and, if after such examination, all timbers, beams, knees, keelsons, transoms, breasthooks, remaining plank, inside or outside, or other parts found to be defective, be replaced with materials of the same species, or of equal quality with those of which the ship was originally constructed, and all the treenails driven out and renewed, such ship may be Restored. But if timber of an inferior description, or second-hand English or African Oak or Teak be used, then for a period not exceeding that for which such materials would have entitled a new ship to stand A according to the Tables, subject, in either case, to the ship being at all times thereafter kept in a state of efficient repair.

RESTORATION OF BRITISH NORTH AMERICAN BUILT SHIPS AND FIR SHIPS TO THE CHARACTER A.

First Rule.

55.* At any time before the expiration of two-thirds of the number of years *beyond* the period originally assigned, a ship may be Restored to the A character, on being submitted to the special survey hereinafter described, to be held by two Surveyors, and performing the repairs found requisite.

Requisites for Restoration.

56*.—All the bolts in the range of each deck to be driven out, and the planks taken out. The upper deck waterways, and planksheers and spirketting, and the strake next the waterways on the lower deck in the midships, to be taken out.† All sheathing to be entirely stripped off. All the outside planking from the light water-mark upwards, to be scraped or dubbed bright. A strake in the bottom, between the wales and the light water-mark fore and aft, to be taken out. Planking, either inside or outside, at the discretion of the Surveyors, in quantity equal to one entire strake fore and aft, on both sides to be taken out in midships immediately above the turn of the bilge, and forward and aft at such height as may, in their judgment, best expose the timbers of the frame to view. The limbers to be clear, and the hooks, transoms, and crutches to be exposed. The windlass to be unhung, and the wood linings stripped; and in that state the ship to be submitted to a special survey and examination, at which the attention of the Surveyors is to be particularly directed to the state of the decks, the remaining plank of the topsides, the wales, upper courses, and treenails, and other fastenings; also to the state of the frame, hawse timbers, knightheads, apron, breasthooks, transoms, and crutches,

† In the case of ships fastened with copper or yellow metal, and galvanized iron, in conformity with the Rules, Section 46, where there is no poop or forecastle, if the whole of the planksheer and spirketting of upper deck and outside planking equal to one strake all fore and aft be removed in way of fastening bolts to each tier of beams, below the upper deck beams; and where there *is* a poop and forecastle, then if the whole of the planksheers and spirketting of poop, forecastle, and waist, and a strake of outside planking (in way of fastening bolts to upper deck beams), the entire lengths of the poop and forecastle, and outside planking equal to one strake all fore and aft be removed in way of fastening bolts to each tier of beams below the upper deck beams; and in all cases a strake of deck next the waterway of each deck, on both sides be removed, also the throat bolts of all knees, together with the other requisitions relating to the bottom, ceiling, &c., the further removal of fastenings, bolts, and planks, may, under the sanction of the Committee, be dispensed with, provided their condition be carefully ascertained and favourably reported upon by the Surveyors.

The above relaxations, so far as they relate to the removal of plank and fastenings in the range of the lower deck, will be extended to all ships in which all the lower deck fastenings are of copper or yellow metal.

keelsons, floors, foothooks, and ceiling, the rudder in all its parts and hangings, and also the general sheer and form of the ship. Where the middle line bolts are of iron, their condition is to be ascertained, and if this be not practicable, additional bolts of proper size must be driven through the keelson, floors, and keel, in each alternate frame, also through the stem, apron, and sternpost.

If, after the above examination, the owner should take out all materials and fastenings that may be found defective, or objected to, and replace them with materials allowed by the Rules for the period for which the vessel is to be Restored, such ships to be entitled to Restoration for a period not exceeding two-thirds of that originally assigned to them.

In addition to the above requirements, Ships of 500 *tons and upwards, must be doubled diagonally from the keel to above the first strake of lower deck spirketting. The doubling to be of the thickness and be fastened as prescribed in Section* 68. *If these regulations be complied with within the first period to which the vessels may be entitled to be Continued, under Section* 54, *they will be allowed Restoration for a period equal to the number of years originally assigned. The Restoration will, in all such cases, date from the termination of the original period; but at the expiration thereof they may be entitled to a continuation of one-third of the period of original designation, under Section* 54, *Survey No.* 1.†

Second Rule.

57*. If, at any age of a vessel, an Owner be desirous to have her Restored, such Restoration (on his consenting to the special survey hereinafter described, to be held by two Surveyors, and performing the repairs thereby found requisite) will be granted for a period not exceeding that originally assigned to her.

Requisites for Restoration.

58.* The whole of the outside plank of the vessel to be taken off as low as the second foothook heads. The remainder of the planking, either outside or inside, and all the treenails, together with the decks and waterways, to be removed, *so as to expose the frame and beams entirely to view.* The windlass to be unhung, and the wood linings stripped; and in that state the ship to be submitted to a special survey and examination, and all materials and fastenings found to be defective, must be replaced with materials of the same species, or of equal quality with those of which the ship was originally constructed. If timber of an inferior description be used, a period not exceeding that which such materials would have entitled a new ship to stand A according to the Tables, will be granted.

† In the case of doubled ships, or ships of peculiar construction, special application may be made to the Committee.

59. Ships which have been *Restored* shall be entitled to Continuation, subject to the same conditions of survey and examination as are prescribed for ships proposed to be Continued at the expiration of the period first assigned to them (Sec. 54); but in like manner, the term of such extended Continuance shall be limited to a period not exceeding one-third or two-thirds of the number of years for which the ships may respectively have been *Restored*, without any reference whatever to the period originally assigned to them.

At the termination of the several periods assigned to ships for remaining on the character A, or A in red, they will have the word "*expired*" inserted against them; and if not surveyed prior to the reprinting of the Register Book, they will appear without any character.* But if during the *last year* of the period assigned to them, the Owners of a ship shall, in consequence of her being about to proceed on a distant foreign voyage, apply to have her surveyed for Continuation on the letter A, or for the character A in red, a special survey shall be held conformably to the Rules, Sections 54 or 60, as the case may be: and if from the report of such special survey, the ship shall appear to be in all respects in a sound and efficient state, such as is required by those Rules, the Committee shall, from the period at which the ship's character would terminate, continue her on the letter A, or assign to her the character A in red in accordance with the Rules referred to.

SHIPS A, IN RED.

60. Ships that have passed the periods which have or might have been assigned to them for the character A originally, or on Continuation, or for Restoration, and shall be found on survey to be of a superior description, being fit for the safe conveyance of dry and perishable goods to and from all parts of the world, shall be classed A in Red, as the Second description of the First class.—(*For British North American built Ships and Fir Ships, see Second Survey, latter part.*)

In all cases in which the Owner may claim this character, the ship must undergo a special survey by two surveyors (to be appointed in every instance by the Committee),

* Ships launched between the 1st July, 1859, and the 30th June, 1863, inclusive, will retain the characters respectively assigned to them until the issuing of the Register Book for the year commencing on the 1st July next ensuing after the periods for which they have been classed shall have expired, provided they undergo the Surveys required by the Rules, and are kept in an efficient state of repair. In the case of ships launched on and after the 1st July, 1863, the period originally assigned to them on the A 1 character, will in every case date from the month in which the vessel may be launched, and will expire at the end of the corresponding month in the year at which the period assigned terminates.

All ships launched previously to the 1st July, 1859, will remain under the Rules in force when they were built.

one of whom shall be an exclusive officer of the Society, and be subject in other respects to a compliance with the undermentioned requisitions of Survey, viz. :—

First Survey for A, in Red.

The ship to be either placed in dry dock or laid on blocks, so that the keel may be examined, and be scraped or dubbed bright from the light water-mark upwards, including the plankshеers and waterways, so as to expose the surface of the plank to view.* Bolts, if of iron, in number not less in any case than six on each side, in each range of the deck fastenings to be driven out in ships of 500 tons and under, and increased in number in proportion to the size of the ship, and one treenail to be driven out in every alternate frame or fourth timber between the upper edge of the wales and plankshеers, and one in every alternate frame or fourth timber between the upper edge of the wales and the light water-mark, and such other parts of the bottom as the surveyors may direct, so as to enable a judgment to be formed as to the general state of the treenails, timbers, and of the planking at the treenail holes. The hold to be cleared, and proper stages made both inside and outside. The windlass to be unhung, and the wood linings stripped. The attention of the Surveyors shall then be particularly directed to the state of the upper or main deck and comings, the upper and lower deck bolts, and the outside planks through which they pass, the plankshеers, waterways, and beams, so far as they can be examined; the hawse timbers, knightheads, breasthooks, and transoms; the floors and keelsons; the keel, rudder, and windlass; the planking outside and inside, and the treenails; and the frame and inner surface of the outside planking, where they can be seen; and the sheer and general form of the ship; the condition of the oakum and caulking also to be ascertained, and the ship to be efficiently repaired with suitable materials as hereinafter stated.

The term for which a vessel may be assigned the character A in red upon a compliance with the foregoing requirements, will not exceed two-thirds the number of years beyond that assigned originally, or on Restoration.

* If the ship has been sheathed with wood over felt, fastened with copper or mixed metal nails, within a period of five years, and the plank from the light water-mark upwards shall, when so sheathed, have been brightened, and the condition of the bolts, planking, treenails, and caulking ascertained, and favourably reported upon by the Surveyors; and provided that the sheathing which covers the binding bolts and raft ports, and a strake of sheathing all fore and aft on each side under the wales be removed, and listings of sheathing cut out at hood ends; and the planking, fastenings, and caulking so exposed shall prove to be in good condition, then, on application to the Committee, the stripping from the light water-mark upwards may be dispensed with; but whenever the sheathing is removed, the outside planking is to be scraped or dubbed bright, and examined as prescribed by the above rule.

If the ship has been sheathed with metal within a period of two years, and it shall appear to the Surveyors that stripping from the light water-mark upwards may be dispensed with, the case will receive due consideration on application to the Committee.

Second Survey for A, in Red.

(After two-thirds the number of years beyond that assigned originally, or on Restoration, have expired.)

But when a period of two-thirds of the number of years beyond that originally assigned for a vessel's retaining the A character, or if a period of two-thirds the number of years beyond that assigned on Restoration has elapsed, an owner be desirous to have his ship *retain,* or be placed upon, this character, application must be made to the Committee in writing, who will direct the survey to be made by two surveyors, one of whom shall be an exclusive officer of the Society; and for the purpose of holding such survey, the ship must be placed in dry dock, or laid on blocks upon ways, so that the keel may be examined; all sheathing to be entirely stripped off the bottom and elsewhere; all the outside planking from light water-mark upwards, including the planksheers and waterways, to be scraped or dubbed bright; the timbers of the frame to be exposed to view by the removal of planking equal to one strake fore and aft, on each side, above the wales, either inside or outside at the discretion of the Surveyor; a short plank in each buttock; a plank or listing of sufficient breadth, on each side, at the discretion of the Surveyor, in the ceiling above the floor heads all fore and aft (or, if the ship-owner should prefer it, a plank outside at the same height), and a reasonable number of treenails before and abaft the same, so as to ascertain the state of the lower timbers of the frame; and in order to ascertain the condition of the beam ends, either a strake of deck next the waterways on each side to be taken out, or an examination be made by boring, at the option of the Ship-owner; iron bolts and treenails to be driven out at the various parts as prescribed above;* proper stages to be made both inside and outside; the windlass to be unhung, and the wood linings stripped; and when in the state above described, the special survey to be held as above directed upon all the parts exposed to view; the condition of the oakum and caulking to be ascertained; the ship to be efficiently repaired with suitable materials, as hereinafter stated. And to entitle them to continue this character, such vessels will be required, in addition to the usual annual survey, to undergo a special re-survey, as prescribed above, within a period (from the date of the last special re-survey) not exceeding *two-thirds* of the several terms of years originally assigned to them, or earlier, if, in the judgment of the Surveyors, upon a careful examination of the ship, the same shall appear to them to be necessary.

In the repair of vessels for the above character, no materials may be used of a description inferior to those allowed in new Ships for the Six Years' grade, except in the case of vessels originally classed for a shorter period than six years, when materials equal to those used in the original construction will be permitted.

* In the case of doubled ships, or ships of peculiar construction, special application may be made to the Committee.

BRITISH NORTH AMERICAN BUILT SHIPS AND FIR SHIPS.

All Ships built in the British North American Colonies and all Fir Ships seeking the character A in red, must be submitted to the Special Survey described in Survey No. 2 for *British North American Built and Fir Ships*, Section 54.

If in addition to the examination therein required the ship be doubled diagonally, as per Section 68, from the keel to above the first strake of lower deck spirketting, she will be allowed the character A in red *for a period equal to that originally assigned to her*; and in such cases the renewal of the treenails from upper part of chocks at second foothook heads to the lower part of chocks at floor heads will not necessarily be required.

In no case, however, will a British North American built ship, or Fir Ship, of 1000 *tons and upwards, be allowed the character A in red after the expiration of twice the number of years originally assigned to her, unless she be doubled diagonally as above.*

N.B.—At the termination of the several periods assigned to ships for remaining on the character A in red, they will have the word "*expired*" inserted against them; and if not surveyed prior to the reprinting of the Register Book, they will appear without any character.

SHIPS Æ.

61. Ships that have passed the prescribed age for the A character, but have not undergone the repairs which would have entitled them to be Continued or Restored; or having been Continued or Restored, and the additional period thus assigned expired, and also such ships as have never had an original character, which shall be found on survey fit for the conveyance of dry and perishable goods on *shorter voyages*, shall be distinguished by the diphthong Æ; and a careful survey will be required to be made *annually*, or on the return of the ship from every foreign voyage, by one of the Surveyors to this Society, who is to state distinctly and separately the actual condition of the *upper deck fastenings, waterways, spirketting, planksheers, topsides, upper deck with its appendages, lower deck fastenings, wales, counter, plank, and treenails outside to the water's edge, rudder, windlass and capstan, beams, breasthooks, transoms, and timbers;* but if not surveyed within twelve months, such ship having been during that time in some port in the United Kingdom, the character will be omitted until such survey be held; or, as the case may be, she will be allowed to pass in the class E.

62. Ships built in the British North American Colonies, and all ships wherever built, the frames of which are composed of *Fir*, of 400 tons and above, shall, in order to entitle them to be classed in the Register Book of the Society, be secured in their bilges by the application of iron knee riders, or hanging knees and riders to cover the joints of the

floor and foothook heads, to extend from the height of the hold beams to the floors so as to receive not less than two bolts in a substantial part of the floors; the number of iron knees and riders to be not less than one of each to every hold or lower deck beam on each side. The knees to be connected with the riders or not, at the option or convenience of the owners; but if not so connected, the side arms of the knees are to be of the length and to be fastened as prescribed in Table F. The number of knees to each deck, and of riders, also their dimensions, and number of bolts, are fully explained in Table F. All ships built in the Colonies will be considered as "iron fastened" in their centre lines, unless it shall be satisfactorily shown to the contrary, either by the exposure of some of the bolts, or by a certificate to be produced from the Builders.

On and after the 1st January, 1858, ships which proceed to sea *without being fastened with the iron knees and riders prescribed by the Rules, will have one year deducted* from the period to which they would otherwise be entitled to be classed in the Register Book.

Ships built in the British North American Colonies, and all ships, the frames of which are composed of Fir, of 600 tons and upwards, *and all ships* (*wherever built*) the length of which (measured from the fore part of the stem to the after part of the stern-post on the range of upper deck) shall exceed five times their extreme breadth, or eight times and under nine times their depth, shall have diagonal iron plates closely inserted either outside or inside the frame. If placed outside, the said plates to extend from the upper side of upper tier of beams to the lower part of chocks at first foothook heads amidship, and to the same perpendicular height forward and aft, measured from the lower part of the keel; and if placed inside, the plates are to extend from the upper side of upper tier of beams to the lower part of chocks at *floor heads*. Whether placed outside or inside, the sizes of the plates not to be less than as follows, viz.:—

In ships of	100	tons and under	200	tons	...	$3\frac{1}{2}$	by $\frac{7}{16}$	inch.
,,	200	,,	400	,,	...	4	by $\frac{1}{2}$	,,
,,	400	,,	700	,,	...	4	by $\frac{5}{8}$	,,
,,	700	,,	1,000	,,	...	$4\frac{1}{2}$	by $\frac{3}{4}$	,,
,,	1,000	,,	1,500	,,	...	5	by $\frac{3}{4}$	,,
,,	1,500	and above	.....			$5\frac{1}{2}$	by $\frac{7}{8}$	,,

and to be fastened with bolts, one at each alternate timber if outside, and one at each timber if inside, not less in diameter than the sizes given for "through butt bolts" in Table D.

The number of plates to be in proportion of not less than one pair to every 12 feet of the ship's entire length taken as above, but not to be more than 8 feet asunder measured on a square; the said plates are to be placed diagonally, at an angle of not less than 45 degrees, their lower ends pointing to the after end of the keel in the after body, and to the fore end of the keel in the fore body, four pairs crossing each other amidship.

All such ships to have shelves and waterways to each tier of beams, each equal in contents to the transverse sectional area of the beams of their respective decks at their ends; each of the said shelves and waterways to be bolted through the outside planking at every timber, with bolts of the sizes given in Table D; likewise the shifts of inside and outside planking not to be less than 6 feet, unless there be a strake wrought between them, and then a distance of 5 feet will be allowed.

In ships the length of which shall exceed *six* times their extreme breadth, or nine times and under ten times their depth, the number of plates must be not less than one pair to every *ten* feet of the ship's entire length taken as above, but not to be more than six feet asunder measured on a square, and to be placed diagonally as above described.* And in addition to the requirements for ships of five times their breadth in length, such ships must be fitted with a rider keelson, or a pair of sister keelsons, at the option of the Owner,—the transverse sectional area of such rider keelson or sister keelsons each to be equal to two-thirds of that required in Table B for main keelsons.—If a rider keelson be adopted, it is to be fastened with a through bolt (of the size required in Table D for keelson bolts) in every frame; or if the Owner prefers it, every intermediate bolt may be short, passing through the main and rider keelsons.† If sister keelsons be fitted, they must be fastened with through bolts, in number not less than one in every alternate timber, and of the size required in Table D for "scarphs of keels," &c.

63. All British North American built ships, which have gone, or may go off the List of Ships of the A character, or which may be of an age exceeding the period for which they might have had claims to be put upon that grade (whether classed or not), shall, as from time to time they come under examination, be subjected to a careful survey, to be made by one of the Surveyors to this Society;—and no further character shall be assigned them unless a survey shall be held as follows; and planking, either inside or outside, at the discretion of the Surveyors, in quantity equal to *one entire strake* fore and aft on both sides, shall be removed; to be taken out in midships immediately above the turn of the bilge, and at *such height* forward and aft as may, in their judgment, best expose the timbers of the frame to view; that a special report of the state of these timbers, and of the general state and condition of the upper deck fastenings, waterways, spirketting, planksheers, topsides, upper deck with its appendages, lower deck fastenings, wales, counter, plank and treenails outside to the water's edge, rudder, windlass, and capstan, beams and breasthooks, shall be transmitted by the Surveyors to the Committee; and on

* In cases where the length of the ship exceeds ten times its depth, the Builders or Owners are to submit, through the resident surveyor, for the Committee's approval, their plans for giving the vessel the necessary strength longitudinally.

† In all cases in which a rider keelson is fitted, it must be fastened as prescribed above, irrespective of the relative dimensions of the ship.

the receipt of such report the character shall be assigned. If the Æ character be then assigned, it shall be continued (subject to an annual survey) for a period not exceeding the number of years originally assigned; at the expiration of which the character will be discontinued, unless a similar survey and examination of the frame be again submitted to.

SHIPS E

64. Will comprise all ships which shall be found on survey fit for the conveyance of cargoes not in their nature subject to sea damage *on any voyage.*

65. Subject to occasional inspection, at least once in every two years, ships will continue in this class so long as their condition shall, in the opinion of the Committee, entitle them thereto.

SHIPS I

66. Will comprise ships which shall be found on survey fit for the conveyance, *on shorter voyages* (not out of Europe), of cargoes in their nature not subject to sea-damage.

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67. The Bottom of every ship is to be CAULKED* once in every five years, unless wood-sheathed and felted, and then once in every seven years, except in the case of *Teak-built ships,* upon which a special survey may have been requested, and the Surveyors having ascertained, by the removal of a strake of sheathing fore and aft under the wales, and a strake at the first foothook heads, and by causing listings to be cut out at the wood's ends, that such caulking is not required, the same may then be dispensed with. If any ship shall be stripped within the periods above mentioned, her bottom is to be caulked, *if necessary.*

68. In all cases in which ships may be doubled, doubling of not less than the thickness hereinafter mentioned will be required, the same to be properly wrought and fastened as follows: in every instance the doubling is to be at least single fastened either with treenails or with bolts,† and a through bolt in every butt. If treenails be used, every treenail must, if practicable, be a through fastening; and if bolts be used, then one-sixth of them from the lower part of the bilge upwards must be through and clenched on the ceiling in addition to the butt bolts. In all cases of doubling, the rudder braces are to be removed.

* In cases where ships have been doubled with doubling of less thickness than is required by, or not fastened in accordance with, the Rules, it will not be imperative that such doubling be stripped at the expiration of seven years, as required for ordinary sheathing; but if, upon survey, the doubling be found in good condition, the period for its remaining on may be extended, with the sanction of the Committee, to a term not exceeding ten years, provided the doubling below the wales be copper or yellow metal fastened or treenailed.

† Ships hereafter doubled, if the doubling be iron fastened, will lose their character, *if such fastenings be coppered over.* 21*st September,* 1865.

The throat bolts of iron knees, and the bolts of iron hooks, crutches, and pointers, must be renewed through the doubling.

The thickness of the doubling for the wales and bottom, on ships

Under 400 tons to be not less than ... ... 2 inches
of 400 ,, and under 600 tons ... ... $2\frac{1}{2}$,,
of 600 ,, and above ... ... 3 ,,

On the topsides of ships not exceeding 300 tons, the thickness may be $1\frac{1}{2}$ inches.

If the doubling be applied diagonally, it will be allowed to be of the following thicknesses, viz :—

In ships under 500 tons ... ... $1\frac{1}{2}$ inch
,, 500 tons and under 1,000 tons ... ... 2 ,,
,, 1,000 tons and upwards ... ... $2\frac{1}{2}$,,

No ship hereafter doubled shall be entitled to the character A, or A in red, unless at the time of doubling it be ascertained, in either case, that the frame is capable of securely retaining the fastenings, *by one treenail being driven out in every alternate frame or fourth timber between the upper edge of the wales and the light water-mark, and at such other parts of the bottom as the Surveyors may direct, so as to enable a judgment to be formed as to the general state of the treenails and timbers, and of the planking in the treenail holes*, or should the state of the treenails indicate defective timbers, or should the outside plank be bolt fastened, then, by cutting out listings or plank at the discretion of the Surveyor.

Diagonal doubling on ships built in the British North American Colonies, or on ships built of Fir, is to be fastened as under, viz. :—

If worked not above 11 inches broad may be single fastened with a through bolt at every butt, every *fifth* fastening to be a through bolt or a through treenail of hardwood; the distance between these through fastenings not to exceed 4 ft. 6 in. The remaining fastenings to consist of through treenails or two long and two short dump bolts; the length of the short dumps may be half an inch less than the combined thickness of the doubling and the original outside plank, and that of the long dumps to be not less than the thickness of the doubling added to twice the thickness of the original outside plank.

Before doubling, the original fastenings in the outside planking and the rider bolts should be ascertained to be in efficient condition, or made good, but all treenails, from the lower part of the chocks at the floor heads, to the upper part of the chocks at the second futtock heads throughout the bilges for one half the length of the ship amidships, shall be *renewed* through the original inside and outside planking with hardwood treenails, unless such treenails were originally of hardwood or have been recently renewed—then application may be made to the Committee with the view of dispensing with this requirement. In all cases the throat bolts and the bolt next thereto in the

No. 22.

Minimum Weights (ex. Stock) of Anchors of unobjecti
and the proof strain to which they are to be

Ship's Tonnage.	Anchors.							
	Number.			Weight.				
				Bowers*		Including Stock.		
	Bowers.	Stream.	Kedges.	Ex. Stock.	Admrlty Test.	Stream.	Kedge.	2nd Kedg
Tons.				Cwts.	Tons.	Cwts.	Cwts.	Cwts.
50	2	1	1	$2\frac{1}{4}$	$4\frac{7}{10}$	1	$\frac{1}{2}$	—
75	2	1	1	$2\frac{3}{4}$	$5\frac{2}{10}$	$1\frac{1}{2}$	$\frac{3}{4}$	—
100	2	1	1	4	$6\frac{4}{10}$	$1\frac{3}{4}$	1	—
125	2	1	1	$5\frac{1}{4}$	$7\frac{6}{10}$	2	1	—
150	2	1	1	6	$8\frac{2}{10}$	$2\frac{1}{2}$	$1\frac{1}{4}$	—
175	2	1	1	$7\frac{1}{4}$	$9\frac{5}{10}$	$2\frac{3}{4}$	$1\frac{1}{4}$	—
200	3	1	1	$8\frac{1}{4}$	$10\frac{4}{10}$	3	$1\frac{1}{2}$	—
250	3	1	2	10	12	$4\frac{3}{4}$	$2\frac{1}{4}$	1
300	3	1	2	12	$13\frac{9}{10}$	5	$2\frac{1}{2}$	$1\frac{1}{4}$
350	3	1	2	$13\frac{1}{2}$	$15\frac{2}{10}$	6	3	$1\frac{1}{2}$
400	3	1	2	$15\frac{1}{4}$	$16\frac{7}{10}$	$6\frac{1}{2}$	$3\frac{1}{4}$	$1\frac{3}{4}$
450	3	1	2	$16\frac{3}{4}$	18	7	$3\frac{1}{2}$	$1\frac{3}{4}$
500	3	1	2	18	19	8	4	2
600	3	1	2	21	$21\frac{6}{10}$	9	$4\frac{1}{2}$	$2\frac{1}{4}$
700	3	1	2	$23\frac{1}{2}$	$23\frac{5}{10}$	10	5	$2\frac{1}{2}$
800	3	1	2	$25\frac{1}{2}$	$25\frac{2}{10}$	$10\frac{1}{2}$	$5\frac{1}{4}$	$2\frac{3}{4}$
900	3	1	2	$27\frac{3}{4}$	$26\frac{9}{10}$	11	$5\frac{1}{2}$	$2\frac{3}{4}$
1000	3	1	2	30	$28\frac{6}{10}$	12	6	3
1200	3	1	2	32	$30\frac{1}{10}$	13	$6\frac{1}{2}$	$3\frac{1}{4}$
1400	3	1	2	34	$31\frac{6}{10}$	$13\frac{1}{2}$	$6\frac{3}{4}$	$3\frac{1}{4}$
1600	3	1	2	$36\frac{1}{2}$	$33\frac{4}{10}$	14	7	$3\frac{1}{2}$
1800	3	1	2	38	$34\frac{5}{10}$	$14\frac{1}{2}$	$7\frac{1}{4}$	$3\frac{1}{2}$
2000	4	1	2	40	$35\frac{7}{10}$	15	$7\frac{1}{2}$	$3\frac{3}{4}$
2500	4	1	2	42	$37\frac{1}{10}$	17	$8\frac{1}{2}$	$4\frac{1}{4}$
3000	4	1	2	45	$39\frac{2}{10}$	19	$9\frac{1}{2}$	$4\frac{3}{4}$

Mem.—For Steamers the Anchors and Cables will not be required to exceed in weight

* Two of the Bower Anchors must not be less than the weight set forth above, but in the third a reduction of 15 per cent. will be allowed.
All Anchor Stocks must be of acknowledged and approved description.

‡ In cases
not exceedin
diameter, pr
links, not les
cent. beyond

Lloyd's Register of Shipping,
2, *White Lion Court, Cornhill, 27th March,* 1866.

iable form and proportions; Sizes and Lengths of Chain Cables;
ested; and Sizes and Lengths of Hawsers and Warps.

Stud-Chain Cables. †			Hawsers and Warps.					Ship's Tonnage.
			Stream.					
Minimum Size	Proved to Admiralty Test.	Length.	Chain.	Rope.	Hawser.	Warp.	Length.	
Inches.‡	Tons.	Fathoms.		Inch.	Inch.	Inch.		Tons.
$1\frac{1}{16}$	$8\frac{1}{2}$	120	$\frac{7}{16}$	5	3	—		50
$1\frac{2}{16}$	$10\frac{1}{10}$	120	$\frac{7}{16}$	5	3	—		75
$1\frac{3}{16}$	$11\frac{9}{10}$	150	$\frac{8}{16}$	$5\frac{1}{2}$	3	—		100
$1\frac{4}{16}$	$13\frac{3}{4}$	180	$\frac{8}{16}$	$5\frac{1}{2}$	$3\frac{1}{2}$	—		125
$1\frac{5}{16}$	$15\frac{4}{10}$	180	$\frac{9}{16}$	6	4	—		150
1	18	180	$\frac{9}{16}$	6	4	—		175
$1\frac{1}{16}$	$20\frac{3}{10}$	180	$\frac{10}{16}$	$6\frac{1}{2}$	4	—		200
$1\frac{2}{16}$	$22\frac{3}{4}$	210	$\frac{10}{16}$	7	5	—		250
$1\frac{3}{16}$	$25\frac{4}{10}$	210	$\frac{11}{16}$	$7\frac{1}{2}$	$5\frac{1}{2}$	—		300
$1\frac{4}{16}$	$28\frac{1}{10}$	240	$\frac{11}{16}$	$7\frac{1}{2}$	$5\frac{1}{2}$	—		350
$1\frac{5}{16}$	31	240	$\frac{12}{16}$	8	6	—		400
$1\frac{6}{16}$	34	270	$\frac{12}{16}$	$8\frac{1}{2}$	$6\frac{1}{2}$	—		450
$1\frac{7}{16}$	$37\frac{2}{10}$	270	$\frac{13}{16}$	9	7	—		500
$1\frac{8}{16}$	$40\frac{1}{2}$	270	$\frac{13}{16}$	$9\frac{1}{2}$	7	4		600
$1\frac{9}{16}$	44	300	$\frac{14}{16}$	10	8	5		700
$1\frac{10}{16}$	$47\frac{1}{2}$	300	$\frac{14}{16}$	10	8	5		800
$1\frac{11}{16}$	$51\frac{2}{10}$	300	$\frac{15}{16}$	10	9	$5\frac{1}{2}$		900
$1\frac{12}{16}$	$55\frac{1}{10}$	300	$\frac{15}{16}$	10	9	$5\frac{1}{2}$		1000
$1\frac{13}{16}$	$59\frac{1}{10}$	300	1	10	$9\frac{1}{2}$	6		1200
$1\frac{14}{16}$	$63\frac{1}{4}$	300	1	10	10	6		1400
$1\frac{15}{16}$	$67\frac{1}{2}$	300	$1\frac{1}{16}$	11	$10\frac{1}{2}$	$6\frac{1}{2}$		1600
2	72	300	$1\frac{1}{16}$	11	11	7		1800
$2\frac{1}{16}$	$76\frac{1}{2}$	300	$1\frac{2}{16}$	11	11	7		2000
$2\frac{1}{8}$	$81\frac{3}{10}$	330	$1\frac{2}{16}$	12	12	8		2500
$2\frac{1}{4}$	$91\frac{1}{10}$	360	$1\frac{3}{16}$	12	12	8		3000

The Length of them to be 90 fathoms each.

† Unstudded close-link Chains of 1 inch in diameter and under, will be admitted as Cables, if proved to two-thirds the Test required for Stud-Chains. But in all such cases a short length, not less than twelve links, must be tested up to the full strain for Stud-link Chains.

and length those of a sailing vessel of two-thirds their total tonnage.

here parties are desirous of using or supplying Chains of smaller size than is set forth above, a reduction will be allowed one-sixteenth of an inch in Chains of 1 inch to $1\frac{1}{8}$ inch diameter, and one-eighth of an inch in Chains above $1\frac{1}{8}$ inch ided they be subjected to the Admiralty Strain for the size for which they are to be substituted, and further, that a few than twelve, to be selected by the tester, shall be proved to the breaking strain, and shew a margin of at least 10 per he Admiralty Proof for a chain of the full size required by the Table.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

iron knees and riders must be renewed through the doubling. The upper ends of the diagonal doubling to be worked against a fore and aft strake of doubling, the upper edge of which is to be *let into* the original plank sufficient to form a caulking seam, say not less than $1\frac{1}{2}$ inch. The lower ends of the diagonal doubling to be worked against two strakes of fore and aft doubling, the lower edge of the lower strake being rabbetted into the keel, and to be not less in thickness than one-and-a-half times the thickness of the doubling. All diagonal doubling to be of rock elm or of equally suitable material, and be wrought on hair felt.

Iron-fastened Ships.

69. All ships, although iron-fastened (except as hereinafter mentioned), shall be classed in the same manner as copper-fastened ships, so long as they remain unsheathed with copper, provided they are, in all other respects, constructed in accordance with the Rules; but when sheathed with copper over the iron fastenings, the words "Coppered over Iron Bolts" shall be added to the character in the Register Book, and continued until the ship be thoroughly copper-fastened.

70. Ships built in India, although fastened with iron, shall be permitted to be copper-sheathed without any mark being placed in the book, provided the bottom be felted or chunamed and wood-sheathed, and subjected to a careful examination of the iron fastenings on every occasion on which the sheathing is stripped off, for which purpose some of the bolts and nails are to be taken out of the lower part of the bottom, and to be seen by the Surveyor; but no such ship shall be permitted to continue either on the A or on the A in red class for a longer period than one-half the number of years beyond the term originally assigned for her remaining on the A character, unless the bottom shall have been doubled, or the whole of the iron fastenings taken out or properly secured, and the bottom refastened with bolts, or treenails, or both, including the middle line, breasthook, and crutch bolts.

EQUIPMENT.

71. All vessels are required to have their masts, spars, and rigging, the rudder, pumps, windlass or capstan, scuppers, and hawse pipes, in good order, and sails in sufficient number and in good condition.

72. Every ship is to be provided with anchors, cables, &c., of approved quality, properly tested at a *public machine*,* in number and length, as set forth in the Table, No. 22, annexed.

For equipment the *total tonnage* of the ship is to be taken.

A Certificate of all Chains and Anchors having been tested, and of the strain applied to them, must be produced before the Ship is classed.

* See Notice in Appendix at end of Register Book.

73. The length and condition of the Chain Cables are to be ascertained by removal from the lockers on every Special Survey for Classification.

74. In all cases where hempen cables are used, one-sixth more in length will be required.

Boats.

75. All vessels under 150 tons to be provided with one good Boat; and every vessel of 150 tons and above to have a suitable number.

76. The efficient state and condition of the whole of the ships' equipment will be designated by the figure 1; and where the same are found insufficient in quantity, or defective in quality, by the figure 2.

SHIPS NAVIGATED BY STEAM.

77. Steam ships are to be subject to the same periodical surveys as sailing vessels, and whenever the boilers are taken out, the vessel is to be submitted to a particular and special survey, in order to ascertain her general condition.

78. That with respect to the Boilers and Machinery, the Owners are required to produce to the Surveyors at the above-directed surveys, a certificate from some competent *Engineer*, describing their state and condition at those periods; and to which certificate it is desirable there should be a description of the particulars of the same, as far as may be practicable, in the manner and form annexed, No. 8; to be appended to the report of survey, and delivered to the Committee, who will thereupon insert in the Register Book the letters "M.C." denoting that the boilers and machinery have been inspected and certified to be in good order and safe working condition; but if no certificate of their condition be furnished by the Owner or Master, then no character can be assigned for the machinery.

79. Hull:—The Surveyors are directed to examine and report the scantling of timbers, plank, and fastenings, and to state where built, and by whom, in the same manner as directed for sailing vessels.

80. The Surveyors are required to report the number, size, length, fastenings, and mode of arrangement of the engine and boiler *sleepers*, and the description of timber of which they are composed, and whether diagonally trussed with wood or iron, and to what extent; the length, size, and fastenings of shelf-pieces and paddle-beams; and whether the vessel be constructed with sponcings, and how they are formed; and to give the length and shifting of the plank outside and inside.

81. Materials and Equipment:—The Surveyors are to examine and report the number and description of the masts, sails, anchors, cables, hawsers, warps, and boats, as directed to be done for sailing vessels; but the anchors and cables will not be required to

exceed in weight and length those of a sailing vessel of two-thirds of the total tonnage of the steam vessel.

82. The Surveyors are to be particular in examining and reporting the condition of the boats of all vessels employed in carrying passengers.

FOREIGN BUILT SHIPS.

It having been deemed desirable that *Foreign Built Ships*, which have not been constructed in accordance with the Rules of the Society, should nevertheless be entered in the Register Book with a character of efficiency if their condition be such as to entitle them thereto, the following Regulations have been adopted for their Survey and Classification, viz. :—

Foreign Built Ships which have not been constructed in accordance with the Rules, and have not been surveyed by the Surveyors to this Society while building, for which the Owners are desirous of a character of condition or efficiency for sea-going purposes, will be surveyed for entry in the Register Book on application being made to the Committee, in writing, stating the Name of the Vessel (and if at any time she had any other name such is to be inserted in the application); likewise where and when she was built, and her length, breath, depth, and tonnage (whether British or Foreign).

The Committee will then direct a special survey to be held by two Surveyors, to be appointed in every instance by the Committee, one of whom at least shall be an exclusive officer of the Society, and the ship submitted to a compliance with the undermentioned requisitions of survey; viz. :—

In all cases the ship must be placed in dry dock or laid on blocks, so that the keel and bottom may be seen and properly examined; the hold to be cleared and proper stages to be made both inside and outside; the limbers to be cleared, bolts and treenails to be driven out at different parts of the ship, and in sufficient number to enable the Surveyors to ascertain their condition; the condition of the plank and timbers in the treenail holes also to be ascertained; the beam ends in ships of four or more years old must be examined by boring. The Surveyors must then examine and report upon the ship, as to the state of the timbers of the frame (where examined), planking inside and outside, decks, waterways, beams, knees, keel, keelsons, stem, apron, hawse timbers, knightheads, breasthooks, transoms, rudder, and windlass, the sheer and general form of the ship, particulars of materials and scantlings, so far as they can be ascertained, and spacing of timbers and beams, thickness and shifting of plank, mode of fastening, sizes and condition of bolts and treenails, and state of caulking in all parts of the vessel.

Survey No. 1. If the ship is less than four years old, a listing of not less than four inches wide and equal to one fifth of the length of the ship on each side, to be cut out below each set of clamps or shelves in such parts as the Surveyors may require, sufficient to enable them to ascertain the size and condition of the frame.

Survey No. 2. If the ship is four or more years old, she must be scraped bright from the light water-mark upwards, including the planksheers and waterways, and a listing of not less than four inches wide must be cut fore and aft below each set of clamps or shelves, and at the bilges at the discretion of the Surveyor, and a short listing outside at each buttock. This must apply to all ships of four or more years old, whether they have had the short listings previously cut or not.

If after such examination all repairs are done to the satisfaction of the Surveyors, so as to enable them to make a favourable Report, a class of efficiency will be granted by the Commitee, and entered in the Register Book, which class will be retained for twelve months only, unless it shall be made appear by the Owner that the ship has not been in any port in the United Kingdom during that period; but in no case will it be continued for more than two years unless the vesssel be re-surveyed as above; but upon such re-survey the openings described therein will not be required to be repeated within a period of four years.

There will be three designations of condition or character, distinguished thus:

1 F
2 F
3 F

1 F denotes ships which are found on survey to be of a superior description, fit for the conveyance of dry and perishable goods to and from all parts of the world.

2 F denotes ships which, although not equal to the foregoing, are nevertheless found on survey to be in a good and efficient conditon, and fit for the conveyance of dry and perishable goods, on shorter voyages.

3 F denotes ships which shall be found on survey fit for the conveyance of cargoes not in their nature subject to sea damage.

It is to be distinctly understood that the foregoing regulations will be confined in their application to *Foreign Built Ships*.

To entitle the ships to the fig 1, they must be supplied with stores in accordance with Table 22, attached to the Rules.

SHIPS WITH IRON FRAMES AND WOOD PLANKING.

The Committee's attention having been called to the principle of building ships with *iron* frames and *wood* planking, they have considered it right to recommend the following suggestions for adoption if the ships are intended for classification in the Register Book, viz. :—

Where Iron frames are intended to be planked with but *one* thickness of wood, the space from moulding edge to moulding edge not to exceed eighteen inches; but if the outside planking be in *two* or *more* thicknesses, *worked diagonally*, the distance may be increased.

In either case thick garboard strakes are required; and when one thickness only is intended, the planking from garboards to the upper edge of wales, is not to be less in thickness than is required in Table B for *wales* in wood ships, and thence upwards to be of the thickness required for *sheerstrakes*.

All such ships to have rivetted outside the frames a deep plate fore and aft at top height, or sheerstrake, and one fore and aft of less breadth at lower part of bilges; also to have narrow plates diagonally extended from one to the other, rivetted to them and to the frames which they cross,—the said diagonal plates to be from six to eight feet asunder on a square.

To have a plate fore and aft on upper side of wood keel, extended up the lower part of stem and sternpost; the said plate to be rivetted to all frames, and secured to the keel between the frames; also to be of sufficient breadth to receive fastenings in thick garboard strakes. The thickness of the above-named plates may be the same as is required for stringer plates on ends of beams in iron ships.

BEAMS :—Their size and distance apart to be as required for iron-plated ships, and to have stringer plates upon their ends, also fore and aft, and diagonal tie-plates rivetted upon upper side of beams, as is required for iron-plated ships.

Butts of outside planking to be placed in centre of space between two frames, and throughbolted upon a plate rivetted to the frames, the plate to be of the width of planking and not less than the thickness of the frames.

Middle-line, side, and bilge keelsons, and angle iron on stringer plates, not to be less in scantlings than are required for iron-plated ships of the same dimensions.

Floors, if of plate iron, to be of the dimensions required for iron-plated ships.

When the outside planking is in two or more thicknesses, *the inner thicknesses* (if more than one), *provided they be entirely of teak*, may be fastened to the frame with galvanized iron bolts in ships claiming, in other respects, the 14 years' grade, under the Rules, Sec. 46.

If the garboard strakes are in one thickness they may be of elm, but the 'thwartship bolts must be of copper or yellow metal, to entitle the ship to the advantage of such fastenings in classification.

In other respects the classing of such ships to be governed by the description of wood material which may be used for outside planking and other parts.

To entitle such Ships to Classification, the plans on which they are to be built must be first submitted to the Committee for their approval.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

2, *White Lion Court, Cornhill*
1*st July*, 1866.

GOOD QUALITY, PROPERLY SEASONED, AND FREE FROM DEFECTS.

	E PLANK.			INSIDE PLANK, &c.		
	ght Mark to Wales.	Wales, Black-Strakes, Topsides, and Sheer-strakes.	Upper deck Waterway, Spirk'tting, and Planksh'rs.	Shelves, Clamps, Limber and Bilge Strakes, Ceiling in Hold and betwixt Decks, also Spirketting and Waterway below the Upper Deck.		
1	12	12	12	12	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak; East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	1
2	10	10	10	12	Mahogany of Hard Texture, Cuba Sabicu, Pencil Cedar, Angelly, and Venatica	2
3	9	8	9	10	Other Continental White Oak, Spanish Chesnut, and Blue Gum	3
4	8	7	7	9	N. American White Oak, American Sweet Chesnut, Stringy Bark, and Red Cedar	4
5	8	8	10	8	Pitch Pine, Larch, Hackmatack, Tamarac, and Juniper	5
6	—	—	5	5	Second-hand English Oak, African Oak, and East-India Teak §§	6
7	8	7	10	8	Cowdie, Huon Pine	7
8	8	7	10	8	Baltic and American Red Pine	8
9	4	—	—	5	English Ash	9
10	4	—	—	5	Foreign Ash	10
11	6	5	5	6†	American Rock Elm and Hickory	11
12	5	4	4	4	European and American Grey Elm	12
13	4	4	4	5	Black Birch and Black Walnut	13
14	5	5	5	5	Spruce Fir	14
15	5	4	4	5	White Cedar	15
16	4	—	—	5	Beech	16
17	5	5	5††	5	Yellow Pine	17
18	4	4	4	4	Hemlock	18

owed for Limber Strakes, Bilge Strakes, and Ceiling between them in Ships of the 7 years' grade.

the 7 years' grade only.

measured, in midships, from the top of the Limber Strake to the top of the Upper Deck Beams.

length of the Keel, in Ships of the 7 years' grade.

ıe 6 years' grade.

ided the Beams are well secured independently of the Waterways.

gdom.

*Lloyd's Regist*0 Tons and under *only*.

21*st Sep* allowed a higher grade (not exceeding two years) than as set forth above.

SHIPS WITH IRON FRAMES AND WOOD PLANKING.

The Committee's attention having been called to the principle of building ships with *iron* frames and *wood* planking, they have considered it right to recommend the following suggestions for adoption if the ships are intended for classification in the Register Book, viz. :—

Where Iron frames are intended to be planked with but *one* thickness of wood, the space from moulding edge to moulding edge not to exceed eighteen inches; but if the outside planking be in *two* or *more* thicknesses, *worked diagonally*, the distance may be increased.

In either case thick garboard strakes are required; and when one thickness only is intended, the planking from garboards to the upper edge of wales, is not to be less in thickness than is required in Table B for *wales* in wood ships, and thence upwards to be of the thickness required for *sheerstrakes*.

All such ships to have rivetted outside the frames a deep plate fore and aft at top height, or sheerstrake, and one fore and aft of less breadth at lower part of bilges; also to have narrow plates diagonally extended from one to the other, rivetted to them and to the frames which they cross,—the said diagonal plates to be from six to eight feet asunder on a square.

To have a plate fore and aft on upper side of wood keel, extended up the lower part of stem and sternpost; the said plate to be rivetted to all frames, and secured to the keel between the frames; also to be of sufficient breadth to receive fastenings in thick garboard strakes. The thickness of the above-named plates may be the same as is required for stringer plates on ends of beams in iron ships.

BEAMS :—Their size and distance apart to be as required for iron-plated ships, and to have stringer plates upon their ends, also fore and aft, and diagonal tie-plates rivetted upon upper side of beams, as is required for iron-plated ships.

Butts of outside planking to be placed in centre of space between two frames, and throughbolted upon a plate rivetted to the frames, the plate to be of the width of planking and not less than the thickness of the frames.

Middle-line, side, and bilge keelsons, and angle iron on stringer plates, not to be less in scantlings than are required for iron-plated ships of the same dimensions.

Floors, if of plate iron, to be of the dimensions required for iron-plated ships.

When the outside planking is in two or more thicknesses, *the inner thicknesses* (if more than one), *provided they be entirely of teak*, may be fastened to the frame with galvanized iron bolts in ships claiming, in other respects, the 14 years' grade, under the Rules, Sec. 46.

If the garboard strakes are in one thickness they may be of elm, but the 'thwartship bolts must be of copper or yellow metal, to entitle the ship to the advantage of such fastenings in classification.

In other respects the classing of such ships to be governed by the description of wood material which may be used for outside planking and other parts.

To entitle such Ships to Classification, the plans on which they are to be built must be first submitted to the Committee for their approval.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

2, *White Lion Court, Cornhill*
1*st July*, 1866.

TABLE A.

EXHIBITING THE NUMBER OF YEARS TO BE ASSIGNED TO THE DIFFERENT DESCRIPTIONS OF TIMBER USED IN SHIPS, THE SAME TO BE OF GOOD QUALITY, PROPERLY SEASONED, AND FREE FROM DEFECTS.

		TIMBERING.									OUTSIDE PLANK.					INSIDE PLANK, &c.		
		Floors.	First Foothooks.	Second Foothooks.	Third Foothooks and Top Timbers.	Main and Rider Keelsons.	Transoms, Knightheads, Hawse-Timbers, Apron, and Deadwood* Stem and Stern Post.	Beams and Hooks.	Knees.	Rudder and Windlass. — Main Pieces.	Keel to First Futtock Heads.	First Futtock Heads to Light Mark	Light Mark to Wales.	Wales, Black-Strakes, Topsides, and Sheer-strakes.	Upper deck Waterway, Spirk'tting, and Planksh'rs.	Shelves, Clamps, Limber and Bilge Strakes, Ceiling in Hold and betwixt Decks, also Spirketting and Waterway below the Upper Deck.		
1	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak; East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak; East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	1
2	Mahogany of Hard Texture, Cuba Sabicu, Pencil Cedar, Angelly, and Venatica	10	10	10	10	10	10	12	12	10	12	12	10	10	10	12	Mahogany of Hard Texture, Cuba Sabicu, Pencil Cedar, Angelly, and Venatica	2
3	Other Continental White Oak, Spanish Chesnut, and Blue Gum ..	9	9‡	7	7	9	7	8	8	7	12	12	9	8	9	10	Other Continental White Oak, Spanish Chesnut, and Blue Gum	3
4	N. American White Oak, American Sweet Chesnut, Stringy Bark, and Red Cedar.....	8	8‡	7	7	8	7	7	7	7	12	10	8	7	7	9	N. American White Oak, American Sweet Chesnut, Stringy Bark, and Red Cedar	4
5	Pitch Pine, Larch, Hackmatack, Tamarac, and Juniper	7	7	7	7	8	7	8	8	7‖	12	10	8	8	10	8	Pitch Pine, Larch, Hackmatack, Tamarac, and Juniper	5
6	Second-hand English Oak, African Oak, and East-India Teak §§	7	7	6	6	6	6	6	6	5	—	—	—	—	5	5	Second-hand English Oak, African Oak, and East-India Teak §§	6
7	Cowdie, Huon Pine	6 ¶	6	6	7	7	6	7	7	—	10	9	8	7	10	8	Cowdie, Huon Pine	7
8	Baltic and American Red Pine....	5	5	5	7	7	5	7	7	5‖	9	9	8	7	10	8	Baltic and American Red Pine	8
9	English Ash	7	6	5	5	5	4	5	5	5‖	10	7	4	—	—	5	English Ash	9
10	Foreign Ash	5	5	4	4	5	4	5	5	—	10	7	4	—	—	5	Foreign Ash	10
11	American Rock Elm and Hickory	6 ¶	6	5	5	6	5	5	5	4	12§	8	6	5	5	6†	American Rock Elm and Hickory	11
12	European and American Grey Elm	5	5	4	4	4	4	5	5	—	12§	8	5	4	4	4	European and American Grey Elm	12
13	Black Birch and Black Walnut ..	5 ¶	5**	4	4	4	4	4	4	4‖	10	7	4	4	4	5	Black Birch and Black Walnut	13
14	Spruce Fir	5	5**	5	5	5	4	5	7	5‖	6	6	5	5	5	5	Spruce Fir	14
15	White Cedar	5	5	4	7	4	4	4	7	4‖	6	6	5	4	4	5	White Cedar	15
16	Beech	5 ¶	4	—	—	4	—	—	—	4‖	12§	8	4	—	—	5	Beech	16
17	Yellow Pine	—	—	—	4	4	4	4	4	—	6	5	5	5	5††	5	Yellow Pine	17
18	Hemlock	4	4	4	4	—	—	4	4	—	4	4	4	4	4	4	Hemlock	18

* This Table applies as to the Deadwood so far as regards the Material to be used from the height of two feet above the rabbet of the Keel.

† American Rock Elm allowed for Limber Strakes, Bilge Strakes, and Ceiling between them in Ships of the 7 years' grade.

‡ If the First Foothooks run up above the Light Watermark, the use of Foreign White Oak is allowed for the 7 years' grade only.

§ The use of Elm and Beech, in Ships above the 8 years' grade, to be restricted to a height from the lower part of the Main Keel, of one-third of the internal depth of the Ship measured, in midships, from the top of the Limber Strake to the top of the Upper Deck Beams.

¶ Black Birch, Beech, American Rock Elm, and Cowdie, allowed for Floors in Midships, to an extent not exceeding one-half the entire length of the Keel, in Ships of the 7 years' grade.

** Black Birch and Spruce allowed for First Futtocks amidships, to the same extent in Ships of the 6 years' grade.

†† Yellow Pine allowed for Waterways of Upper Deck in Ships of the 7 years' grade, if properly fastened, as prescribed in Table B, and provided the Beams are well secured independently of the Waterways.

MEM.—The word "English" includes Timber the growth of the United Kingdom.

‖ The Materials marked thus ‖ under the head of "Rudder and Windlass," allowed in Ships of 300 Tons and under *only*.

§§ In cases where second-hand Teak of approved quality is proposed to be used, application may be made to the Committee with a view to its being allowed a higher grade (not exceeding two years) than as set forth above.

Lloyd's Register of Shipping, London,
21st September, 1865.

SHIPS W

The Committee's att
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2, *White Lion Cou*
1*st July*, 18(

C.

F BEAMS.—*Sec.* 41.

DECK BEAMS	
ed and moulded	
ulded. at ends.	
nches.	Inches.
$4\frac{1}{2}$	$3\frac{3}{4}$
5	4
$5\frac{1}{4}$	$4\frac{1}{4}$
$5\frac{1}{2}$	$4\frac{1}{2}$
$5\frac{3}{4}$	$4\frac{3}{4}$
$6\frac{1}{4}$	$5\frac{1}{4}$
$6\frac{1}{2}$	$5\frac{1}{2}$
$6\frac{3}{4}$	$5\frac{1}{2}$
7	$5\frac{3}{4}$
$7\frac{1}{4}$	6
$7\frac{1}{2}$	$6\frac{1}{4}$
$7\frac{3}{4}$	$6\frac{1}{2}$
8	$6\frac{1}{2}$
$8\frac{1}{4}$	$6\frac{3}{4}$
$8\frac{1}{2}$	7
$8\frac{1}{2}$	$7\frac{1}{4}$
$\frac{3}{4}$	$7\frac{1}{4}$
	$7\frac{1}{2}$
	$7\frac{1}{2}$
	$7\frac{3}{4}$
$\frac{1}{2}$	8
$\frac{1}{2}$	8
$8\frac{1}{4}$	$8\frac{1}{4}$
$8\frac{1}{4}$	$8\frac{1}{4}$
$8\frac{1}{2}$	$8\frac{1}{2}$
$8\frac{1}{2}$	$8\frac{1}{2}$
$8\frac{3}{4}$	$8\frac{3}{4}$
$8\frac{3}{4}$	$8\frac{3}{4}$
9	9

The siding and moulding of *all* the Beams to be the same as those amidships, except those at the *after end* of the Ship, which may be reduced in proportion to their diminished length.

MEM.—When SPRUCE, WHITE CEDAR, or YELLOW PINE is used for Beams, the dimensions are to be increased.—*See Rules, Sec.* 40.

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BEAMS :—Their siz
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1*st July*, 18(

TABLE B.

MINIMUM DIMENSIONS OF TIMBERS, KEELSON, KEEL, PLANKING, &c.

Tonnage ..... Tons....	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1050	1150	1250	1350	1500	1750	2000
*Timber and Space ..... Inches..	18	19	20	21½	23	24¼	25¾	27¼	28½	30	30¼	30½	31	31¼	31½	31¾	32¼	32½	32¾	33¼	33½	33½	33¾	34	34½	35
Floors, sided and moulded at Keelson, if squared	7	7½	8	8¾	9½	10¼	11	11¾	12¼	13	13¼	13¼	13½	13½	13¾	13¾	14	14	14¼	14½	14¾	15	15¼	15¼	15½	15¾
Double Floors, sided and moulded at Keelson, if squared....	6	6½	7	7¾	8½	9¼	10	10½	11¼	12	12¼	12¼	12½	12½	12¾	12¾	13	13	13¼	13½	13¾	14	14¼	14¼	14½	14¾
1st Futtocks, sided and moulded at Floor Heads, if squared †	6	6½	7	7¾	8¼	8¾	9¼	10	10½	11	11¼	11½	11¾	11¾	12	12¼	12¼	12½	12¾	13¼	13½	13¾	14¼	14¼	14½	14¾
2nd Futtocks, sided, if squared	5½	6	6½	7	7½	8	8½	9	9½	10	10¼	10½	10¾	10¾	11	11¼	11¼	11½	11¾	12¼	12½	12¾	13¼	13¼	13½	13¾
3rd Futtocks and Long Top Timbers, sided, if squared.....	5½	5¾	6	6½	7	7¼	7¾	8¼	8½	9	9¼	9½	9¾	9¾	10	10¼	10¼	10½	10¾	11¼	11½	11¾	12¼	12¼	12½	12¾
Top Timbers (Short) sided, if squared	..	..	..	..	..	..	..	..	..	9	9¼	9¼	9¼	9½	9½	9½	9¾	9¾	10	10	10¼	10½	10¾	10¾	11	11¼
Top Timbers, moulded at heads, if squared	4	4½	4¾	5	5	5¼	5½	5¾	6	6	6¼	6¼	6¼	6½	6¾	6¾	7	7	7¼	7¼	7½	7¾	8½	8½	8¾	9
Breasthooks & Wing Transom, sided & moulded in the middle	8	8½	9	9¾	10¼	10¾	11¼	12	12½	13	13¼	13¼	13½	13½	13¾	13¾	14	14	14¼	14½	14¾	15	15¼	15¼	15½	16
‡Keel, Stem, Apron, and Sternpost, sided and moulded	8	9	10	10¾	11¼	11¾	12¼	13	13½	14	14¼	14¼	14½	14½	14¾	14¾	15	15	15¼	15½	15¾	16	16¼	16½	16¾	17
Keelson, also the Mainpiece of Rudder from lower part of Counter upwards, sided and moulded	9	10	11	11¾	12¼	12¾	13¼	14	14½	15	15¼	15¼	15½	15½	15¾	15¾	16	16	16¼	16½	16¾	17	17¼	17½	17¾	18
§Wales.....	3	3½	4	4¼	4¼	4½	4¾	4¾	5	5	5	5	5¼	5¼	5¼	5½	5½	5½	5¾	6	6	6	6¼	6½	6¾	7
‖Bottom Plank, from Keel to Wales.....	2	2¼	2½	2¾	3	3¼	3½	3¾	3¾	4	4	4	4	4	4	4	4¼	4¼	4¼	4¼	4½	4½	4½	4½	4¾	5
Sheer Strakes, Topsides, Upper Deck Clamp where there is no Shelf fitted, and Lower Deck Clamp with a Shelf	2¼	2½	3	3¼	3½	3½	3¾	3¾	4	4	4	4	4	4¼	4¼	4¼	4¼	4¼	4½	4½	4¾	4¾	5	5¼	5½	5½
Ceiling below Hold Beam Clamp	1½	1¾	2	2¼	2½	2¾	2¾	2¾	3	3	3	3¼	3¼	3¼	3¼	3½	3½	3½	3½	3¾	3¾	4	4	4¼	4½	4½
¶Waterway, { Hardwood.....	3½	4	4½	5	5	5½	5½	6	6	6½	6½	6½	7	7	7	7	7½	7½	7½	7½	7½	8	8	8½	8½	9
Fir	4	4½	5	5½	6	6½	6½	7	7½	8	8	8	8½	8½	8½	8½	9	9	9	9	9	9½	9½	9½	9½	10
Ceiling betwixt Decks	1½	1¾	2	2	2¼	2¼	2¼	2½	2½	2½	2½	2½	2½	2¾	2¾	2¾	2¾	2¾	2¾	2¾	3	3	3	3¼	3½	3½
Bilge Plank, inside, Thick Strakes over long and short Floorheads, and Limber Strake	2½	2¾	3	3¼	3¼	3½	3¾	3¾	4	4	4¼	4¼	4½	4½	4¾	4¾	5	5	5¼	5½	5¾	6	6¼	6¼	6½	7
Lower Deck Clamp where there is no shelf fitted, and Spirketting	..	..	3	3¼	3½	3¾	4	4	4¼	4½	4½	4¾	4¾	4¾	4¾	4¾	5	5	5	5¼	5¼	5½	5½	5½	5¾	6
Upper Deck Clamp where a shelf is also fitted.....	2	2¼	2½	2½	2¾	2¾	2¾	2¾	3	3	3	3¼	3¼	3¼	3¼	3½	3½	3½	3½	3¾	3¾	4	4	4¼	4½	5
Planksheer	2	2¼	2½	2¾	3	3¼	3½	3¾	3¾	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4¼	4½	5
Flat of Upper Deck	2½	2½	2½	2½	2½	3	3	3	3	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	4	4	4	4	4	4	4
Scarphs of Keelson without Rider	ft. in. 4 6	ft. in. 4 9	ft. in. 5 0	ft. in. 5 3	ft. in. 5 6	ft. in. 5 10	ft. in. 6 2	ft. in. 6 6	ft. in. 6 9	ft. in. 7 0	ft. in. 7 0	ft. in. 7 0	ft. in. 7 0	ft. in. 7 0	ft. in. 7 3	ft. in. 7 3	ft. in. 7 3	ft. in. 7 3	ft. in. 7 6	ft. in. 7 6	ft. in. 7 9	ft. in. 7 9	ft. in. 8 0	ft. in. 8 0	ft. in. 8 0	ft. in. 8 0
Ditto, where Rider Keelson is added, also Scarphs of Keel ..	4 0	4 3	4 6	4 9	5 0	5 2	5 4	5 6	5 9	6 0	6 0	6 0	6 0	6 0	6 3	6 3	6 3	6 3	6 6	6 6	6 9	6 9	7 0	7 0	7 0	7 0

For Moulding, see foot note.

Moulding of Futtocks and Top Timbers to diminish gradually from size given at Floor Heads to that at Top Timber Heads. *See Rule, sec.* 38.

* Should the timber and space be increased, the siding of the timbers to be increased in proportion. *See Rules, Sec.* 39.

† When the heels of 1st Foothooks meet at the middle line on the Keel, under the Keelson, either with full moulding, or with Cross Chocks properly butted, the siding of single Floors, and their moulding at the Keelson, may be *reduced* to the siding and moulding allowed for Double Floors.

§ For Breadth of Wales required in every case, *see Section* 45.

‡ The rabbet of the Keel, Stem, and Sternpost to be made so as to leave sufficient substance of wood to form a substantial back rabbet.

All the fore and after hoods, both outside and inside, may be reduced one-sixth in thickness. Furrens are not allowed in this or in any other part of a ship.

¶ This Depth of Waterway for Faying Surface against Timbers is required, below the underside of the Planksheer, to receive in and out through Bolts at alternate Timbers, with alternate through bolts in Shelf, and in Clamp where there is no Shelf.

Mem.—For relaxations in respect to Poops, Top-gallant forecastles, and raised quarter decks, *see Rules, sec.* 38. For requirements for Vessels of excessive length as compared with breadth and depth, *see Rules, Secs.* 39, 45, *and* 62.

TABLE C.

SIDING AND MOULDING OF BEAMS.—*Sec.* 41.

Length of Beam *amidships.*	Hold Beams		Deck Beams	
	sided and moulded.	moulded at ends.	sided and moulded.	moulded at ends.
Feet	Inches.	Inches.	Inches.	Inches.
10	—	—	4½	3¾
11	—	—	5	4
12	—	—	5¼	4¼
13	—	—	5½	4½
14	—	—	5¾	4¾
15	8	6¾	6¼	5¼
16	8½	7	6½	5½
17	8¾	7½	6¾	5½
18	9¼	7¾	7	5¾
19	9½	8	7¼	6
20	10	8½	7½	6¼
21	10¼	8¾	7¾	6½
22	10½	9	8	6½
23	11	9¼	8¼	6¾
24	11¼	9½	8½	7
25	11¾	9¾	8½	7¼
26	12	10	8¾	7¼
27	12¼	10¼	9	7½
28	12½	10½	9	7½
29	12¾	10¾	9¼	7¾
30	13	11	9½	8
31	13¼	11¼	9½	8
32	13½	11½	9¾	8¼
33	13¾	11½	10	8¼
34	14	11¾	10	8½
35	14¼	12	10¼	8½
36	14½	12¼	10¼	8½
37	14¾	12½	10½	8¾
38	15	12½	10½	8¾
39	15¼	12¾	10½	9
40	15½	13	10¾	9

The siding and moulding of *all* the Beams to be the same as those amidships, except those at the *after end* of the Ship, which may be reduced in proportion to their diminished length.

Mem.—When Spruce, White Cedar, or Yellow Pine is used for Beams, the dimensions are to be increased.—*See Rules, Sec.* 40.

N.B.—The size of Orlop Beams to be the mean of the sizes here prescribed.

Lloyd's Register of Shipping,
26th May, 1863.

1050	1150	1250	1350	1500	1750	2000
33¼	33½	33½	33¾	34	34½	35
14½	14¾	15	15¼	15¼	15½	15¾
13½	13¾	14	14¼	14¼	14½	14¾
13¼	13½	13¾	14¼	14¼	14½	14¾
12¼	12½	12¾	13¼	13¼	13½	13¾
11¼	11½	11¾	12¼	12¼	12½	12¾
0	10¼	10½	10¾	10¾	11	11¼
7¼	7½	7¾	8½	8½	8¾	9
½	14¾	15	15¼	15¼	15½	16
½	15¾	16	16¼	16½	16¾	17
½	16¾	17	17¼	17½	17¾	18
	6	6	6¼	6½	6¾	7
½	4½	4½	4½	4½	4¾	5
½	4¾	4¾	5	5¼	5½	5½
	3¾	4	4	4¼	4½	4½
	7½ 9	8 9½	8 9½	8½ 9½	8½ 9½	9 10
	3	3	3	3¼	3½	3½
	5¾	6	6¼	6¼	6½	7
	5¼	5½	5½	5½	5¾	6
	3¾	4	4	4¼	4½	5
	4	4	4	4¼	4½	5
	4	4	4	4	4	4
	ft. in. 7 9	ft. in. 7 9	ft. in. 8 0	ft. in. 8 0	ft. in. 8 0	ft. in. 8 0
	6 9	6 9	7 0	7 0	7 0	7 0

siding and moulding allowed for Double Floors.

ery case, *see Section* 45.

lamp where there is no Shelf.

es, *Secs.* 39, 45, *and* 62.

TABLE C.

SIDING AND MOULDING OF BEAMS.—*Sec.* 41.

LENGTH OF BEAM *amidships.*	HOLD BEAMS		DECK BEAMS	
	sided and moulded.	moulded at ends.	sided and moulded.	moulded at ends.
Feet	Inches.	Inches.	Inches.	Inches.
10	—	—	4½	3¾
11	—	—	5	4
12	—	—	5¼	4¼
13	—	—	5½	4½
14	—	—	5¾	4¾
15	8	6¾	6¼	5¼
16	8½	7	6½	5½
17	8¾	7½	6¾	5½
18	9¼	7¾	7	5¾
19	9½	8	7¼	6
20	10	8½	7½	6¼
21	10¼	8¾	7¾	6½
22	10½	9	8	6½
23	11	9¼	8¼	6¾
24	11¼	9½	8½	7
25	11¾	9¾	8½	7¼
26	12	10	8¾	7¼
27	12¼	10¼	9	7½
28	12½	10½	9	7½
29	12¾	10¾	9¼	7¾
30	13	11	9½	8
31	13¼	11¼	9½	8
32	13½	11½	9¾	8¼
33	13¾	11½	10	8¼
34	14	11¾	10	8½
35	14¼	12	10¼	8½
36	14½	12¼	10¼	8½
37	14¾	12½	10½	8¾
38	15	12½	10½	8¾
39	15¼	12¾	10½	9
40	15½	13	10¾	9

The siding and moulding of *all* the Beams to be the same as those amidships, except those at the *after end* of the Ship, which may be reduced in proportion to their diminished length.

MEM.—When SPRUCE, WHITE CEDAR, or YELLOW PINE is used for Beams, the dimensions are to be increased.—*See Rules, Sec.* 40.

N.B.—The size of Orlop Beams to be the mean of the sizes here prescribed.

Lloyd's Register of Shipping,
26th May, 1863.

TABLE D.

SIZES OF BOLTS, PINTLES OF RUDDER, AND TREENAILS. *Section* 46.

TONNAGE	50	100	150	200	250	300	350	400	450	500	700	900	1350
Heel-Knee, Stemson, and Deadwood Bolts ..... Inches	14/16	15/16	1	1	1 1/16	1 2/16	1 2/16	1 3/16	1 4/16	1 4/16	1 5/16	1 6/16	1 8/16
Bolts in Sister Keelsons, Scarphs of Keel,* Arms of Breast Hooks, Pointers, Crutches, Riders, Hanging and Lodging Knees to Hold or Lower Deck Beams (except in and out Throat Bolts of Hanging Knees, which must be larger), also in and out Bolts of Shelf, Clamp, and Waterway of Hold or Lower Deck Beams, and the in and out Throat Bolts of Upper Deck Hanging Knees.	11/16	12/16	12/16	12/16	13/16	14/16	14/16	15/16	15/16	1	1 2/16	1 3/16	1 4/16
Keelson Bolts (one through Keel at each Floor), Throats of Transoms, Throats of Breasthooks, and Throats of Hanging Knees to Hold or Lower Deck Beams	12/16	13/16	14/16	14/16	15/16	1	1	1 1/16	1 2/16	1 2/16	1 3/16	1 4/16	1 6/16
Bilge, Limber Strake, and Through Butt Bolts	9/16	10/16	10/16	11/16	11/16	12/16	12/16	13/16	13/16	14/16	14/16	15/16	1
Other Butt Bolts	9/16	10/16	10/16	10/16	11/16	11/16	11/16	12/16	12/16	12/16	12/16	13/16	14/16
Bolts through heels of cant timbers at fore and after Deadwood. In and out Bolts of Upper Deck Waterway, Shelf and Clamp, also Arms of Hanging and Lodging Knees, except in and out Throat Bolts of Hanging Knees, which must be larger	10/16	11/16	11/16	11/16	12/16	13/16	13/16	14/16	14/16	14/16	15/16	1	1 2/16
Pintles of Rudder { The Braces of which must extend so as to receive not less than Two Bolts on the Planking on each side ..... }	1 7/8	2	2	2 1/4	2 3/8	2 1/2	2 5/8	2 3/4	3	3	3 1/4	3 1/2	3 1/2
Hardwood Treenails	1	1	1	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4	1 1/4	1 3/8	1 3/8	1 3/8	1 1/2

* NUMBER OF BOLTS IN SCARPHS OF KEEL:—

In Ships of 150 Tons and under ..... 6 Bolts
" above 150 Tons and under 500 Tons .... 7 do.
" 500 Tons and above ..... 8 do.

N.B.—Bolts to be through and clenched, as prescribed in *Section* 46, and to be of good quality, well made with suitable heads and be tightly driven.

Lloyd's Register of Shipping,
16*th May*, 1861.

TABLE E.

NUMBER OF HANGING KNEES
Section 41.

Tons.	To Hold Beams.	To Upper Deck Beams.
	PAIRS.	PAIRS.
150	—	4
200	4	6
250	5	7
300	6	8
350	7	9
400	8	10
450	8	11
500	9	12
550	9	13
600	10	14
650	10	15
700	11	16
750	11	17
800	12	18
900	13	20
1000	14	22
1100	15	24
1350	17	26

Ton	450	500	700	900	1350
Hee/16	1 4/16	1 4/16	1 5/16	1 6/16	1 8/16
Bol: H16 I o	15/16	1	1 2/16	1 3/16	1 4/16
Kee/16 a:	1 2/16	1 2/16	1 3/16	1 4/16	1 6/16
Bilg16	13/16	14/16	14/16	15/16	1
Oth16	12/16	12/16	12/16	13/16	14/16
Bolt V6 o:	14/16	14/16	15/16	1	1 2/16
Pin/4	3	3	3 1/4	3 1/2	3 1/2
Har/4	1 1/4	1 3/8	1 3/8	1 3/8	1 1/2

ection 46, and to be of good quality, well made

Li

TABLE E.

NUMBER OF HANGING KNEES
Section 41.

Tons.	To Hold Beams.	To Upper Deck Beams.
	PAIRS.	PAIRS.
150	—	4
200	4	6
250	5	7
300	6	8
350	7	9
400	8	10
450	8	11
500	9	12
550	9	13
600	10	14
650	10	15
700	11	16
750	11	17
800	12	18
900	13	20
1000	14	22
1100	15	24
1350	17	26

)	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
	:c tion 62										
	r ds, one	to ever	y Beam								
	$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{3}{4}$	$4\frac{3}{4}$	5	5	$5\frac{1}{4}$	$5\frac{1}{4}$	$5\frac{1}{2}$	$5\frac{1}{2}$
	4	$4\frac{1}{4}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{3}{4}$	$4\frac{3}{4}$	$4\frac{3}{4}$	$4\frac{3}{4}$
	$2\frac{3}{4}$	3	3	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{3}{4}$
	$4\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{3}{4}$	$4\frac{3}{4}$	5	5	$5\frac{1}{4}$	$5\frac{1}{4}$	$5\frac{1}{2}$	$5\frac{1}{2}$
	3	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{3}{4}$	$3\frac{3}{4}$
	$2\frac{3}{4}$	3	3	3	3	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{2}$
	1	1	1	1	1	1	1	1	1	1	1
	ft. in. 3 9	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0

s substitutes for Hanging Knees below them. For sizes of Bolts, see Table **D.**

:k Knees, may be three inches shorter than those of the Lower Deck.

to have not less than Four Bolts; and shorter than that length, to have not less than Three Bolts.

TABLE F.

MINIMUM DIMENSIONS OF IRON KNEES AND KNEE RIDERS FOR BRITISH NORTH AMERICAN BUILT SHIPS AND FIR SHIPS.—*Section 62.*

TONNAGE .....Tons	150	200	250	300	350	400	450	500	550	600	650	700	750	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Number of Hanging Knees to Hold or Lower Deck Beams .....Pairs	3*	4	6	8	9	Upwards, one Knee Rider to every Beam, or Knees and Riders as per Section 62																				
Number of Hanging Knees to Upper and Middle Deck Beams .....Pairs	4	6	7	8	9	10	11	12	13	14	15	16	17	18	Upwards, one to every Beam											
Breadth of Knees and Riders to Hold or Lower Deck Beams .....Inches	3	3	3	3	3	3	3¼	3¼	3½	3½	3¾	3¾	4	4	4¼	4¼	4½	4½	4¾	4¾	5	5	5¼	5¼	5½	5½
Breadth of Upper Deck Knees, where there are two Decks, and of Middle Deck Knees, where there are three Decks .....Inches	3	3	3	3	3	3	3¼	3¼	3½	3½	3½	3½	3¾	3¾	4	4	4¼	4¼	4½	4½	4½	4½	4¾	4¾	4¾	4¾
Thickness of Riders at the joints or butts of the Timbers .....Inches	1¼	1¼	1½	1½	1½	1½	1¾	1¾	2	2	2¼	2¼	2½	2½	2¾	2¾	3	3	3¼	3¼	3½	3½	3½	3½	3¾	3¾
Thickness of Knees to Lower Deck or Hold Beams and Knee Riders at the Angle of the Throat .....Inches	2½	2½	2¾	2¾	3	3	3¼	3¼	3½	3½	3¾	3¾	4	4	4¼	4¼	4½	4½	4¾	4¾	5	5	5¼	5¼	5½	5½
Thickness of Knees to Lower Deck or Hold Beams and Knee Riders at the Throat Bolts..... Inches	1¾	1¾	2	2	2¼	2¼	2½	2½	2¾	2¾	2¾	2¾	3	3	3	3	3¼	3¼	3¼	3¼	3½	3½	3½	3¾	3¾	
Thickness of Knees to Upper or Middle Deck at the Throat Bolts † ..... Inches	1½	1½	1¾	1¾	2	2	2¼	2¼	2½	2½	2½	2½	2¾	2¾	2¾	2¾	3	3	3	3	3¼	3¼	3¼	3¼	3½	3½
Thickness of Hanging Knees (not Riders) at the ends .....Inches	⅝	⅝	¾	¾	¾	¾	⅞	⅞	⅞	⅞	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Length of Beam Arms of Knees and Knee Riders for Lower Deck or Hold Beams ‡ ...	ft. in. 2 6	ft. in. 2 6	ft. in. 2 9	ft. in. 2 9	ft. in. 3 0	ft. in. 3 0	ft. in. 3 3	ft. in. 3 3	ft. in. 3 3	ft. in. 3 6	ft. in. 3 6	ft. in. 3 6	ft. in. 3 9	ft. in. 3 9	ft. in. 3 9	ft. in. 3 9	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0	ft. in. 4 0

NOTE.—The Bolts in all Iron Riders in Hold, to be not more than twenty-one inches apart on the average. Standards upon the Beams of such Ships are not admitted as substitutes for Hanging Knees below them. For sizes of Bolts, see Table **D**.

* Provided the depth of hold be 13ft. or upwards.

† Breadth and thickness of Knees for Upper Deck, where there are Three Decks, may be one sixth less. ‡ Beam Arms of Upper and Middle Deck Knees, may be three inches shorter than those of the Lower Deck.

Side Arms of Hanging Knees not to be less in length, than one and a half the length of their Beam Arms. Beam Arms of Knees and Knee Riders, which are 3ft. 6in. in length, to have not less than Four Bolts; and shorter than that length, to have not less than Three Bolts.

Side Arms of all Hanging Knees to have at least One Bolt more than in the Beam Arms.

Lloyd's Register of Shipping,
27th May, 1858.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

RULES FOR THE BUILDING AND CLASSIFICATION OF SAILING AND STEAM VESSELS BUILT OF IRON.

All vessels will be classed A so long as on careful annual and periodical *special* surveys they are found to be in a fit and efficient condition to carry dry and perishable cargoes to and from all parts of the world.

Differences of construction, as regards thickness of plating, strength, and probable durability, &c., will be indicated by the letters A B and C placed inside the letter A,—thus,  .

 will denote that the vessels have been built in accordance with, or equal to, the Rules and Table G.

 will denote vessels which are considered entitled to the A character, but which have not been built in accordance with the Rules.

All vessels to be subject to occasional or annual survey when practicable.

To entitle Ships to retain their respective characters in the Register Book, the following Special Surveys must be held periodically :—

Survey No. 1.—The vessel to be placed on blocks of sufficient height in a dry dock, or on ways; the limber boards, and ceiling equal to one strake fore and aft on both sides removed, with both surfaces of outside plating exposed.*

Survey No. 2.—The vessel to be placed on blocks of sufficient height in a dry dock, or on ways; the limber boards, and ceiling equal to *three* strakes fore and aft on both sides removed, with both surfaces of outside plating exposed.*

Survey No. 3 by two Surveyors, one to be an Exclusive Officer of the Society.—The vessel to be placed on blocks of sufficient height, in a dry dock, or upon ways; proper stages to be made and the hold to be cleared, the close ceiling in the hold to be removed, so that the rivets and plates of keel, and flat of bottom, may be thoroughly examined; coal bunkers of steam vessels to be cleared, the whole of the frames, stringers, hooks, floor plates, keelsons, engine and boiler bearers,† ends of beams, water-tight bulkheads, rivets, and inner surface of the plating to be exposed;* all oxidation to be removed by

* In cases where the inner surface of the bottom plating is coated with cement or asphalte, if a sufficient quantity of ceiling be removed to enable the coating to be carefully inspected, and tested by beating or chipping, and the coating be found sound and good and adhering satisfactorily to the iron, the removal of such coating will be dispensed with. Ships which have undergone the above examination will be noted in the Register Book thus (*s.s.No.*1–66), (*s.s.No.*2–66), (*s.s.No.*3–66); and if not submitted to such survey, will be liable to have their character suspended.

† Whenever the engines and boilers are taken out for repair, the engine and boiler bearers, with the floor-plates, keelsons, rivets, &c. under them may, at the request of the Owners, be surveyed in anticipation of the above rule.

being cut or beaten off the several parts above-named, also from the outside plating, rivets, keel, stem, sternpost, and rudder, so as to completely lay bare all the surfaces of iron; the plankshеers and waterways, if of wood, to be scraped bright: and when the vessel is so prepared, the Surveyors are to ascertain, by drilling, the thickness of the plating, also the condition of all the parts of iron above-named, and of the plankshеers, waterways, flat of decks and their fastenings; such parts as may be found defective, or less than three-fourths of the required substance by Rule, are to be removed and replaced with proper materials, equal in substance and quality to the original construction.

Whenever the bottom plating is to be cemented, a survey is to be held prior to the cement being laid.

Every ship classed ⩓ must be submitted to a *special periodical survey* every *four* years:—the first survey according to No. 1; the second according to No. 2; the third according to No. 3; and afterwards according to No. 1 and No. 3 *alternately* at intervals of four years.

Every ship classed ⩓B must be submitted to a special periodical survey every *three* years, as per No. 1, 2, and 3, afterwards No. 1 and 3.

Every ship classed ⩓C must be submitted to a special periodical survey every *two* years, as per No. 1, 2, and 3, and afterwards No. 1 and 3.

RULES FOR THE BUILDING OF IRON SHIPS.

The scantlings given in Table G are intended for ships, the length of which, measured from the fore part of the stem to the after part of the stern-post, on the range of the upper deck, does not exceed seven times their breadth, or ten times their depth of hold, taken from the upper part of floors to the top of the upper deck beams. For ships which exceed these proportions, see Section 16.

Quality of Iron and Workmanship.

Maker's Name.

1. The whole of the iron to be of good malleable quality, capable of bearing a longitudinal strain of twenty tons per square inch, and all plate, beam, and angle iron *to be legibly stamped in* TWO *places* with the manufacturer's trade mark, or his name and the place where made, which is also to be stated in the report of survey. The workmanship to be well executed, and submitted to the closest inspection before coating or painting: any brittle or inferior article to be rejected. (It is not intended to prevent the coating of the plates *inside* in the way of the frames.)

Keel, Stem, Stern, and Propeller Posts.

2. The keel, stem, stern, and propeller posts are to be either scarphed or welded together, and to be in size according to Table G; if scarphed, the length of scarphs to be eight times the thickness given in the table for keels; and the stern posts and after end of keel, for screw propelled vessels, to be double the thickness of, or twice the sectional area of, the adjoining length of keel (but the siding in no case to be less

than the thickness of the keel given in Table G), and to be tapered fair into the adjoining length of keel. Where the garboard strakes are thicker than required by the Rules, and extend to the bottom of the keel, the thickness of the keel may be proportionably reduced, but such reduction not to exceed one-third of the requisitions of the Rule. Where the keel and keelsons are made of several thicknesses of plates (*vide m* Fig. 1 and 2, and Fig. 7, 8, 9, 10, and 13), the plates that form the keel to be in thickness, taken together, the same as is required for a solid keel, as per Table G; and the butts of the several plates of which the keel is formed to be carefully shifted from each other, and from the butts of the garboard strakes, which in all cases must also be shifted, so as not to be opposite, or nearer to each other than two spaces of frames. For thickness and breadth of hollow or flat plate keels (*vide* Fig. 6, 11, and 14), see foot note of Table G.

Frames. 3. The frames to be of the dimensions set forth in Table G; to be in as great lengths as possible, fitted close on to the upper edge of the keel, and in all cases to extend to the gunwale; and when butted on the keel (*vide a*, Fig. 1, and Fig. 3, 4, 5, and 12) (except when double frames, or centre through plate keels, are adopted) and wherever elsewhere butted, to have not less than four feet lengths of corresponding angle iron fitted back to back to cover and support the butts and receive the plating. If welded together, the welds to be perfect, with not less than four feet shifts.

Spacing. If single frames be adopted, the space from centre to centre is not to exceed 21 inches all fore and aft; but provided an additional frame, for half the vessel's length amidships, be fitted at opposite sides of each floor plate, across the keel, and extended to upper part of bilges and rivetted through floor plates and main frames, also through the outside plating as required for main frames, the space may be increased to twenty-three inches in Ships under 1,000 tons, and to twenty-four inches in Ships of 1,000 tons and upwards.

Floor Plates. 4. The floor plates to be in depth at middle line according to the following rule, viz.:—To the vessel's depth, measured from the top of keel to the top of upper or spar deck beams amidship, add the extreme breadth of the vessel; two-fifths of that sum *in inches*, to be the depth of the floor plates at middle line; their thickness to be as given in Table G; but at each end of the vessel, for one quarter of her length, they may be reduced in thickness one-sixteenth of an inch where the plates are less than ten-sixteenths, and two-sixteenths of an inch where the plates are ten-sixteenths and upwards. The floor plates to extend up the bilges to a perpendicular height of twice the depth of floors amidship from upper side of keel at middle line (*vide b*, Fig. 1 and 2), and not to be less moulded at their heads than the moulding of the frames. A floor plate to be fitted and rivetted to every frame, and to be extended across the middle line: but where a vertical centre plate is adopted at middle line, then the floor plates are to be efficiently connected to it on

Watercourses. each side by double vertical angle irons. Watercourses are to be formed through all the floor plates on each side of middle line, so as to allow water to reach the pumps freely (*vide c*, Fig. 1, and Fig. 5 to 14).

Reversed Angle Iron.

5. Reversed angle iron on frames to be in size as per Table G. All vessels, of whatever size, to have reversed angle iron rivetted to every frame and floor plate across the middle line to the height of upper part of bilges (*vide d*, Fig. 1), and to have double reversed angle iron in way of all keelsons and stringers in hold (*vide e*, Fig. 1 and 2); and in addition, all vessels of 300 tons and upwards to have reversed angle iron extended from bilges to the upper deck beam stringer on *alternate* frames (*vide f*, Fig. 2); and vessels of 800 tons and upwards to have reversed angle iron extended on *every* frame from bilges to above lower deck or hold beam stringer angle iron if the vessel has two decks or tiers of beams (*vide g*, Fig. 1), and to above the height of middle deck beam stringer angle iron if the vessel has three decks or tiers of beams (*vide h*, Fig. 1 and 2). The rivets for securing the reversed angle iron to the frames and floor plates to be in diameter equal to those specified in the Table for the outside plating, and not to exceed eight times their own diameter apart. Butts of reversed angle iron to be secured with butt straps.

Middle Line Keelsons.

6. The middle line keelson, if of single plate, and standing above the floor plates, to be of the same thickness as the garboard strakes, and to be two-thirds of the depth of floor plates, well fitted and rivetted thereto; and an angle iron of the size as per Table G, to be fitted on each side, both on the top and the bottom, extending all fore and aft; the lower angle irons to be rivetted to the double reversed angle irons on the top of floors (*vide i*, Fig. 1). If a box keelson be adopted, it is to be formed with a foundation plate, the plating to be of the thickness as per Table G, the depth not to be less than two-thirds of the depth of floor plates, and the breadth of the box two-thirds its depth (*vide k*, Fig. 1, and Fig. 4).

If an intercostal middle line keelson be adopted, it is to be of the same thickness as the floor plates, and rivetted to vertical angle iron on all floor plates at each end, the plates to extend from upper edge of keel to above the upper edge of floor plates, sufficiently high to be rivetted to bulb iron bars, of the same strength as the beams (*vide* Fig. 12), or to deeper bulb iron bars let down (*vide* Fig. 5 and 14), or bars of other form, but of equal strength, between double angle irons, of the dimensions given in Table G, extending all fore and aft, and the said double angle irons of keelson are to be rivetted to double angle irons on top of all floor plates.

Where flat plate keels are used, the intercostal keelson plates and centre through plates to be fitted close down on and connected to the keel by double angle irons of the dimensions given in Table G, rivetted all fore and aft to the keel and keelson (*vide* Fig. 14, 11, and 6).

If the middle line keelson be formed of a centre through plate, extending from the lower edge of the keel to the top of the floors, it must not be less in thickness than that required in Table G for intercostal keelsons. To strengthen the floor plates transversely at their intersection at the middle line, in addition to the double vertical angle iron

rivetted to their ends and to the centre plate keelson, there is to be a flat keelson plate, of the same thickness as the garboard strakes, and not less than three-fourths the breadth given in Table G, rivetted to double reverse angle irons on the upper edge of floors, and to two fore and aft angle irons on the upper edge of the centre through plate of the keelson (*vide m*, Fig. 1 and 2, and Fig. 7). But should the centre through plate keelson be extended up above the upper edge of the floors, then it is to be rivetted by two fore and aft angle irons, of the size as per Table G, to two flat plates, one on each side of the middle line, to be well rivetted to the double reverse angle irons on the upper edge of the floors (*vide* Fig. 8 and 13). In all cases the centre plate keelson to be extended to the stem and stern post, and connected thereto where practicable.

Bilge Keelsons. 7. The bilge keelsons to be fitted and secured in an efficient manner, and to extend all fore and aft, and placed at lower turn of bilges, according to the form of the bottom (*vide n*, Fig. 1 and 2). In ships of 1,000 tons and upwards, an intercostal keelson to be fitted on each side, as far forward and aft as practicable, and to be placed about midway between the middle line keelson, and the bilge keelson, with double angle iron rivetted on the top of floor plates (*vide o*, Fig. 1 and 2). All vessels of 500 tons and upwards to have fitted between the bilge keelsons and the hold beams, at the upper part of the turn of bilge, strong angle irons, as stringers, extending all fore and aft, rivetted back to back and to the reversed irons on the frames, the size of them not to be less than those used for the middle line keelson (*vide p*, Fig. 1 and 2).

In all cases the middle line, side, and bilge keelsons, and *where practicable*, the stringers, are to be carried fore and aft, without being cut off at the bulkheads, the latter being made watertight around them; and where such parts of the ship are necessarily separated, the longitudinal strength to be efficiently maintained to the satisfaction of the Surveyor.

Plating. 8. No plates to be less in length than five spaces of frames (*vide* Fig. 2), except the fore and after hoods. No butts of outside plating in adjoining strakes, to be nearer each other than two spaces of frames (*vide* Fig. 2). In vessels under 1,200 tons, the plating may be reduced from the thickness shown in Table G, one-sixteenth of an inch forward and aft, for a distance not exceeding one quarter of the length of the vessel from each end, below the upper edge of main sheerstrake, down to a perpendicular height from upper side of keel of three-fifths the internal depth of hold; and in ships of 1,200 tons and upwards, a reduction of two-sixteenths will be allowed; the plates next abaft and next afore the quarter length of the vessel, to be of an intermediate or graduated thickness, between that required in midship and the reduction allowed at the ends. In screw-propelled vessels, however, no reduction is to be made in the plating at the after end, below the lower part of the rudder trunk.

Butt Straps. All plates are to be well fitted, and secured to the frames and to each other; the butts

to be closely fitted by planing or otherwise, and to be united by butt straps, of not less than the same thickness as the plates, and of sufficient breadth for rivetting, as described hereafter, and to be fitted with the fibre of the iron in the same direction as the fibre of the plates to which they are rivetted; the space between the plating and the frames to have solid filling or lining pieces, closely fitted in one length, and of the same breadth as the frames.

It is recommended that in all cases the sheerstrake be an outside strake, so as to admit of the butt straps or lining pieces being extended, in one piece, from the foreside of the frame next afore the butts to the aftside of the frame next abaft the butts (*vide q*, Fig. 2), or to admit of doubling the sheerstrake where it may be required.—*For breadth of sheerstrake see footnote in Table G.*

Reductions allowed in raised Quarter Decks, Poops, Forecastles, &c.

9. In raised quarter-decks, a reduction of one-fifth from the thickness required by the Table G for such parts in the range of the upper deck in ships with two decks will be allowed in the outside plating, beams, stringer plates upon beams, angle iron on stringer plates, and flat of deck. *The measurement of raised quarter decks is to be included in the gross tonnage for regulating all scantlings.*

In full poops and top-gallant forecastles a reduction of one-fourth from the dimensions required by the Table G for such parts in the range of the upper deck in ships with two decks will be allowed in the outside plating, beams, stringer plates upon beams, angle iron on stringer plates, and flat of deck, but in no case need the outside plating exceed $\frac{6}{16}$ in thickness. These reductions will not be allowed where the united lengths of poop and forecastle exceed three-fifths of the entire length of the upper deck.* In such vessels the gross tonnage below the upper deck is to regulate all scantlings below this deck, except the scantlings of the keelsons and their number, the size of main piece of rudder, and also the requirements as to double rivetting, which are to be regulated by the gross Register tonnage, including that of the engine space in steam vessels. All frames are to extend to the stringer plates of poop and forecastle.

Where the poop or forecastle is constructed in a rounded form at the gunwale, the beams may be of plain angle iron, not less in dimensions than the sizes required in Table G for the main frames; a beam to be properly rivetted to every alternate main frame, with a scarph not less than four feet in length. The breast beams are to be double, and the rounded gunwale is to be plated and properly constructed in all respects to the satisfaction of the Surveyor.

In vessels with three decks (viz., upper, middle, and lower deck), a reduction of one-sixth from the dimensions given for such parts in the range of upper deck in ships with two decks will be allowed in the scantling of beams, flat of deck, and plating, *but not in the dimensions of sheerstrake.*

* Parties desirous of making any alterations in the construction of *poops* and *forecastles*, may submit their plans for the Committee's consideration and approval.

In vessels having three decks or tiers of beams, where the space under the upper deck is to be used only for the accommodation of crew and passengers, or to enclose the engine openings of steam vessels, the gross tonnage below the middle or tonnage deck, is to regulate all scantlings below this deck, but the total gross tonnage is to regulate the scantlings of the keelsons and their number, the size of main piece of rudder, and the requirements for double rivetting. The total depth of hold in spar decked ships must not exceed thirteen-sixteenths, nor be less than twelve-sixteenths of the ship's extreme breadth. In spar decks a reduction of one-fourth from the dimensions required by the Table G, for such parts in the range of the upper deck in ships with two decks, will be allowed in the dimensions of all beams and stringers, and thickness of plating, and flat of deck; but all frames are to extend to the stringer plates of spar deck.

Deckhouses or other erections are allowed on spar decks, but only to the extent of one-tenth of the total superficial area of the spar deck, and are not to exceed seven feet in height. They are not to be placed nearer to either of the ends than one-fifth of the entire length of the vessel.

Vessels to which this rule applies, as regards an entire spar deck, will be noted in the Register Book thus:—"*Spar-decked.*"

The total tonnage of the ship is to regulate the equipment, except the anchors and chains for Steam-vessels. (*See* Section 81.)

Beams

10. Beam plates to be in depth one-quarter of an inch for every foot in length of the midship beams, and to be in thickness one-sixteenth of an inch for every inch in depth of the said beams, and to be made of H iron, T bulb iron, or bulb plate with double angle irons rivetted on upper edge; the two sides of each of these angle irons to be not less in breadth than three-fourths the depth of beam plate, and to be in thickness one-sixteenth of an inch for every inch of the two sides of the angle iron; or the beams may be composed of any other approved form of beam iron, equal in strength. Where beams below the upper or middle deck (including orlop beams) have no deck laid upon them, the angle irons on their upper edges are required to be of the dimensions of the angle iron of the reverse frames. All beams to be well and efficiently connected or rivetted to the frames, with bracket ends or knee plates; each arm of knee plates at ends of beams not to be less in length than twice and half the depth of beams, and to be in thickness equal to the beams. The beams to be placed over each other, and pillared where practicable.

Upper deck beams in vessels with one or two tiers of beams, and the upper (or spar deck) and middle deck beams in vessels with three tiers of beams, to be fastened to alternate frames.

Vessels of 12 feet and under 13 feet depth of hold, or where the gross register tonnage exceeds 200 tons, shall be required to have as many hold beams as may be practicable or

convenient, fastened to at least, every eighth frame. Vessels not being of a depth to require hold beams are to have a double angle iron stringer rivetted to reverse frames extending all fore and aft about midway between bilge keelson and deck beams (*vide r*, Fig. 1).

Vessels of 13 feet depth and under 15 feet, to have hold beams fastened to every fourth frame.

Vessels of 15 feet depth and under 18 feet, to have hold or lower deck beams fastened to every second and fourth frame, alternately.

Vessels of 18 feet depth and above, to have hold or lower deck beams fastened to every alternate frame, and the same number of middle deck beams, where such are required.

All vessels having two decks (viz., upper and lower deck), and exceeding 24 feet in depth from the top of floor plates to the upper side of upper deck beams, and vessels with three decks (viz., upper, middle, and lower deck), and exceeding 24 feet in depth to the upper side of middle deck beams, and where the depth from under side of lower deck beams exceeds 15 feet, such ships to have orlop beams fastened to every sixth frame; also to have stringer plates and angle iron on their ends, all fore and aft, *equal in strength* to the requirement at Section 15; but, in the case of flush deck ships, a depth of 25 feet will be allowed, provided the lower hold does not exceed 16 feet in depth from the under side of lower deck beams. Should a house be constructed on such flush deck ship for lodging crew or for store-room, the same not to extend within 10 feet of the stern-post.

When the spaces between beams exceed two spaces of frames, a knee or bracket plate is to be rivetted to alternate frames and to the stringer plate at underside.

Depth of Hold for Space of Beams.

For the arrangement of beams the depth of hold is to be measured amidship from the top of the floor plates to the top of the upper deck beams in vessels with two decks, and to the top of the middle deck beams in vessels with three decks.

Where a deviation from the foregoing Rules as applying to beams takes place in way of engine-rooms or hatchways, or where no deck is intended to be laid, and the above-named spaces would materially interfere with the stowage of cargo, and where partial or entire bulkheads with horizontal stringers between them, or larger beams are substituted for ordinary beams in wider spaces, a sketch with all particulars must be submitted, through the resident surveyor, for the Committee's consideration. The middle deck to be a perfect deck laid and caulked.

Rivets and Riveting.

11. The rivets to be of the best quality, and to be in diameter as per Table G; the rivet holes to be regularly and equally spaced and carefully punched opposite each other from the faying surfaces in the laps and lining pieces or butt straps, and to be countersunk all through the outer plating (*vide* Fig. 16); the rivets not to be nearer to the butts or edges of the plating, lining pieces to butts, or of any angle iron, than a space not less than their own diameter, and not to be further apart from each other than four times their diameter, or nearer than three times their diameter, and to be spaced through the frames

and outside plating, and in reversed angle iron, a distance equal to eight times their diameter apart. When rivetted up they are completely to fill the holes, and their points or outer ends are to be round or convex (*vide* Fig. 16), and not to be below the surface of the plating through which they are rivetted. All vessels to have all edges or horizontal joints of outside plating double rivetted from the keel to the height of upper part of bilges (*vide d*, Fig. 1), all fore and aft; but vessels of 700 *tons and above*, intended for the highest grade, are to have all edges or horizontal joints of outside plating double rivetted *throughout** (*vide* Fig. 2). The stem, stern post, keel, edges of garboard strakes and sheerstrakes, and butts of outside plating,* and butts of floor plates, breasthooks, transoms, and plates of beams, also butts of keelsons, stringers, shelf-plates, and all longitudinal ties, to be double rivetted in all vessels. The overlaps of plating, where double rivetting is required, not to be less than five and a half times the diameter of the rivets (*vide* Fig. 16); and where single rivetting is admitted, to be not less than three and a quarter times the diameter of the rivets. If double rivetting be adopted where single rivetting is allowed by the Rules, the diameter of the rivets may be reduced one sixteenth of an inch below that prescribed by the Rules, provided that in no case the diameter be less than five-eighths of an inch. The butts and edges of outside plating to be truly fitted, carefully caulked, and made water-tight.

Bulkheads.

12. Steamers, in addition to the engine room bulkheads, to have two water-tight bulkheads, built at a reasonable distance from the ends, to extend from the keel and outside plating to the upper deck in vessels with two decks, and to the middle deck in vessels with three decks (otherwise called "tonnage deck"); but the aftermost bulkhead will not be required to extend to this height if it be continued above the load water line, and be connected to a water-tight platform or deck of iron extending from its upper part entirely round the after part of the vessel, thus rendering the lower after body a water-tight compartment. The bulkhead is to be made water-tight where a screw shaft passes through. And in the construction of vessels propelled by machinery care must be taken that the engine and boiler bearers are properly constructed (and where they may interfere with the longitudinal strength of the vessel they must be extended a sufficient distance beyond the bulkheads of the engine and boiler space, to compensate for such interruption); and after the machinery and boilers are fitted, then as many hold or lower-deck beams are to be introduced as may be practicable; and knee or bracket plates are to be added and rivetted to the stringer-plates, and to alternate frames which have no beams in the said space; and the vessels are to be otherwise made secure where necessary in the engine-room to the satisfaction of the Surveyors. In sailing ships the foremost or collision bulkhead only will be required. All

* The above requirement as regards double rivetting does not apply to poops or forecastles.

plating of bulkheads to be of the thickness prescribed in Table G; and when fitted between two frames at each side of the vessel, to be strongly rivetted through them; or if attached only to one frame, then to have brackets or knee plates rivetted horizontally against the side plating of the vessel and to the bulkheads, foreside and afterside alternately, near the middle of the outside plates, and to be strongly rivetted thereto. Lining pieces between these frames and outside plating in way of bulkheads, are to be plates extending in one piece from the foreside of the frame afore, to the aftside of the frame abaft the bulkhead frames. The bulkheads to be supported vertically by angle irons (of the dimensions given in Table G) not exceeding two feet six inches apart; and to be efficiently connected and rivetted together and to the corresponding floors, beams of the several decks, and the frames. All such bulkheads to be caulked and made thoroughly water-tight. Where a pump is not fitted in each compartment, a sluice cock, or valve is to be fitted at the limbers on each side of middle line, at each water-tight bulkhead, so as to allow water to be shut off, or to reach the pumps when required; the same to be worked from the deck above.

Double Bottoms.

Double Bottoms.—To entitle a Vessel to be noted in the Register Book as having a "*Double Bottom,*" the inner or second bottom must be efficiently constructed, with the plating carried forward to the fore bulkhead, as usually fitted, and to an equal distance from the after end of the ship; the plating not to be less in thickness than that given in Table G. for plating of bulkheads, excepting the flange plate, which must be one-sixteenth thicker. The double bottom must be efficiently connected to the outside plating and frames of the main body of the ship. The butts and edges may be single rivetted. "Man holes" must be constructed, or provision made for the removal of a portion of the plates so as to enable the inner surface of outside plating, the frames, floors, keelsons, and rivets to be thoroughly examined, and coated when required. The upper side of the plating must be protected with wood planking as ceiling.

Should a smaller portion of the ship be constructed as above, such ship may be marked "*Part Double Bottom,*" provided such portions extend to at least one-half of the length.

Ceiling.

13. The wood ceiling or lining is not to be less than $1\frac{1}{2}$ inch, nor more than 3 inches in thickness in any case, and is to be so fastened to the reversed angle irons or frames that it may be easily removed for survey and painting.

Decks, Waterways, and Plank-sheers.

14. The flat of upper deck to be fastened by screw bolts from the upper side, with nuts at the under side of the angle iron of the beams; where the planks exceed six inches in width there must be two bolts in each plank in every beam, one of which may be a short screw bolt, provided the planks do not exceed 8 inches in width, in which case both bolts must be put through. The waterways, if of wood, to be fastened with screw bolts with nuts at under side of stringer plates.

Stringers.

15. All vessels to have stringer plates (of the thickness given in Table G) upon the

ends of each tier of beams. Those upon the ends of upper deck beams in vessels with one or two decks or tiers of beams, and on ends of middle deck beams in vessels with three decks or tiers of beams, to be in width one inch for every seven feet of the vessel's entire length, for half her length amidship, and from thence to the ends of the vessel they may be gradually reduced to three-fourths the width amidship—in no case, however, is the width to be less than eighteen inches amidship. The stringer plates are to be fitted home and rivetted to the outside plating at all upper decks, and at the middle deck in vessels having three decks, with angle iron of the dimensions given in Table G (*vide s*, Fig. 1): the middle deck stringer plate to have an additional angle iron extending all fore and aft inside of the frames, rivetted to the reverse angle iron on the frames, and to the stringer plate (*vide t*, Fig. 1 and 2). Stringer plates on ends of beams below the upper deck in vessels with two decks, or below middle deck in vessels with three decks, may be reduced in width to three-fourths the midship breadth above named, this breadth is to be extended all fore and aft, and to have an angle iron of the dimensions given in Table G, extending all fore and aft, rivetted to the reverse angle iron on the frames, and to the stringer plates (*vide u*, Fig. 1 and 2). In cases where no deck is laid, and the width of stringer plate on ends of hold beams is objected to, it may be reduced, provided such reduction be fully compensated for. The objectionable practice of cutting through the stringer plates for the admission of wood roughtree stanchions will not be allowed.

Tie-plates.

All vessels to have tie-plates ranging all fore and aft upon each side of the hatchways *on each tier of beams*, and in addition thereto the beams of the upper and middle decks in three-decked or spar-decked ships, and of the upper deck in vessels of one or two decks, must have the tie-plates fitted from side to side diagonally (*as shewn in Fig.* 15), whenever the arrangements of the deck will admit of them; the tie-plates are to be in width once and a half the depth of beams, and of the thickness required for stringer plates, and to be well rivetted to each other, and to the beams, deck hooks, and transoms; and all butts to be properly shifted. Upon hold beams where no deck is to be laid, or where tie-plates would interfere with stowage of cargo, an angle iron of the dimensions given in Table G for angle iron on beam stringers, placed at middle line, extending fore and aft wherever practicable, and well rivetted to all beams, deck hooks, and transoms, will be admitted in lieu thereof.

All hatchways and the mast-holes of sailing ships are to be properly framed to receive half beams where required, and the latter to have mast partners at each tier of beams (except at orlop beams) the plating of which is not to be less in thickness than is required for stringer plates, and the united breadths of the plates not to be less than three times the diameter of the masts. The said plates are to be well rivetted to each other, and to the beams, and angle iron carlings; and at the decks where masts are to be

wedged, an angle iron of the dimensions required for the main frames of the ship is to be properly fitted and rivetted to the plates round the mast-holes, The skylights and mast-holes of steam vessels must be properly secured to the satisfaction of the surveyors.

16. In the following cases additional longitudinal strength beyond that stated in Table G will be required, viz. :—

Ships above 10 depths.

Ships above 10, and not exceeding 11 depths in length, to have the main sheerstrake increased in thickness one-sixteenth of an inch amidships, for three-fourths the length of ship; or to have a doubling strake not less than 9 inches broad, for the same distance amidships.

Ships above 11 depths.

Ships above 11, and not exceeding 12 depths in length, to have the main sheerstrake increased in thickness two-sixteenths of an inch amidships, for three-fourths the length of ship, or to have a doubling strake not less than 12 inches broad, for the same distance amidships.

Ships above 12 depths.

Ships above 12, and not exceeding 13 depths in length, to have the main sheerstrake increased in thickness two-sixteenths of an inch amidships, for three-fourths the length of ship, or to have a doubling strake not less than 18 inches broad, for the same distance amidships; and the stringer plate upon ends of upper deck beams, in vessels with one or two decks, or on ends of middle deck beams, in vessels with three decks, is to be increased two-sixteenths of an inch in thickness for half the ship's length amidships, or to be proportionately increased in width for the same distance, and the vessels to have a bulb plate of the dimensions required for beam plates, placed between and rivetted to the double angle iron keelson, at lower part of bilges (at *n*, Fig. 1), for half the length of the ship amidships.

In all the above cases, the doubling plate is not to be of less thickness than the strake next below the sheerstrake, and fitted at the upper edge of the sheerstrake.

Ships above 13 depths.

In ships above 13, and not exceeding 14 depths in length, the main sheerstrake to be doubled its entire breadth for three-fourths the length of ship amidships, the doubling is not to be of less thickness than the strake next below the sheerstrake and fitted upon the edge of the same, and to extend in one or two breadths of plating to the upper edge of sheerstrake. The stringer plate on ends of beams and the bulb plate between the angle irons at bilges to be as is required in the preceding case.

Ships above 14 depths, or 7 breadths.

In cases of ships which exceed 14 depths or 7 breadths in length, the Builders are to submit to the Committee, through the resident Surveyor, their plans for giving the vessel sufficient additional strength longitudinally. The depth for the foregoing purpose in spar decked ships is to be taken from the under side of the "tonnage" or middle deck to the top of the floor plates.

Rudder.

17. The main piece of rudder to be in size according to Table G, of the best hammered iron, and the plating of it to be carefully stayed and rivetted.

Surveys.

18. Vessels intended for Classification to be surveyed as follows, viz. :—

1st. On the several parts of the frame, when in place, and before the plating is wrought.

2nd. On the plating during the progress of rivetting.

3rd. When the beams are in and fastened, and before the decks are laid.

4th. When the ship is complete, but before the plating is finally coated or cemented.

5th. And lastly, after the ship is launched and equipped.

For Equipments, see Sections 71, 72, 73, 74, 75, and 76, of Wood Ships and Table No. 22.

SHIPS NOT BUILT UNDER SURVEY.

19. In cases of ships not surveyed while building for which a character may be required, application must be made to the Committee in writing, who will direct a special examination to be made by two Surveyors of the Society (one of whom shall be an exclusive officer), for which purpose the vessel is to be placed on high blocks in a dry dock or upon ways; the hold to be cleared and proper stages made; the rivets and plating of keel, and flat of bottom thoroughly examined; the close ceiling in the hold to be removed, and coal bunkers of steam-vessels to be cleared; the whole of the frames, stringers, hooks, floor plates, keelsons, engine and boiler bearers, ends of beams, water-tight bulkheads, rivets, and inner surface of the plating exposed to view;* all oxidation to be removed by being cut or beaten off the several parts above named, also from the outside plating, rivets, keel, stem, sternpost, and rudder, so as to completely lay bare all the surfaces of iron; the plank sheers and waterways, if of wood, to be scraped bright; and when the vessel is so prepared, the Surveyors are to ascertain, by drilling, the thickness of the plating, also the condition of all the parts of iron above named, and of the plank sheers, waterways, flat of decks and their fastenings; and send a detailed report thereon, and on the dimensions and quality of the materials and workmanship to the Committee, who will then assign the vessel such character as the facts may appear to them to warrant, and define the periodical Surveys to which they shall respectively be subjected; but in no such case will a higher character than  be allowed.

MEM.—The foregoing Rules have been framed for Iron Ships built with vertical frames and longitudinal plating. Parties desirous of constructing vessels varying from the Rules, must submit their plans with specifications, for approval.

* In cases where the inner surface of the bottom plating is coated with cement or asphalte, if a sufficient quantity of ceiling be removed to enable the coating to be carefully inspected, and tested by beating or chipping, and the coating be found sound and good and adhering satisfactorily to the iron, the removal of such coating will be dispensed with.

RULES FOR THE SURVEY OF IRON SHIPS CLASSED FOR PERIODS OF YEARS.

All vessels to be subject to occasional or annual survey when practicable, and every third year to be specially surveyed in dry dock or laid on blocks; with both surfaces of outside plating exposed;* and whenever the engines or the boilers of iron steam ships are taken out, the vessel shall be submitted to a particular and special survey.

CONTINUATION OF IRON SHIPS TO THE CHARACTER A.

20. If, on the termination of the period of original designation, or if at any subsequent period, not exceeding one-half the number of years assigned originally, or on Restoration, an Owner shall wish to have his ship remain or be replaced on the letter A, he is to send a written notice thereof to the Secretary, and the Committee shall then direct a special survey, as follows, to be held by not less than two competent persons, to be appointed by the Committee, one of them to be a Surveyor the exclusive servant of the Society.

SURVEY.

The vessel to be placed on high blocks, in a dry dock, or upon ways, and proper stages to be made, so that the rivets and plates of keel, and flat of bottom, may be thoroughly examined; the whole of the ceiling or lining inside to be entirely removed; coal bunkers of steam vessels to be cleared, so as to expose the whole of the frames, stringers, hooks, floor-plates, keelsons, engine and boiler bearers, ends of beams, water-tight bulkheads, rivets, and inner surface of the plating, to view; the hold to be cleared; all oxidation to be removed by being cut or beaten off the several parts above-named, also from the outside plating, rivets, keel, stem, sternpost, and rudder, so as to completely lay bare all the surfaces of iron;* the planksheers and waterways, if of wood, to be scraped bright: and when the vessel is so prepared, the Surveyors are to ascertain by drilling, the thickness of the plating, also the condition of all the parts of iron above-named, and of the planksheers, waterways, flat of decks and their fastenings; and upon the Owner consenting to remove and replace with proper materials, equal in substance and quality to the original construction, such parts as may be found defective, or less than three-fourths of the required substance by Rule, such vessel, upon the repairs and efficiency being reported to the Committee, may be Continued on the letter A for a term of years

* In cases where the inner surface of the bottom plating is coated with cement or asphalte, if a sufficient quantity of ceiling be removed to enable the coating to be carefully inspected, and tested by beating or chipping, and the coating be found sound and good and adhering satisfactorily to the iron, the removal of such coating will be dispensed with. Ships which have undergone the above examination will be noted in the Register Book thus (*t. s.*); and if not submitted to such triennial Survey, will be liable to have their character suspended.

not exceeding one-half the number of years assigned originally, or on Restoration, subject to occasional or annual survey when practicable. The period of Continuation will, upon all occasions, commence from the time the ship may have gone off the letter A, without regard to the date when the survey for this purpose may be held.

RESTORATION OF IRON SHIPS TO THE CHARACTER A.

21. If, *at any age of a vessel*, an Owner be desirous to have his ship Restored, such Restoration, on his application to the Committee, and consenting to the special survey hereinafter described, to be held by two Surveyors, one of whom shall be an exclusive servant of the Society, and performing the repairs thereby found requisite, will be granted for a period not exceeding two-thirds of the time originally assigned, the same to be calculated from the date of such repairs.

Survey and Requisites for Restoration.

The vessel to be placed on high blocks, in a dry dock, or upon ways, and proper stages to be made, so that the rivets and plates of keel, and flat of bottom, may be thoroughly examined; the whole of the ceiling or lining inside to be entirely removed; coal bunkers of steam-vessels to be cleared, the boilers to be taken out, and also the engines (unless it shall be shown by previous survey that the removal is unnecessary), so as to expose the whole of the frames, stringers, hooks, floor plates, keelsons, engine and boiler bearers, ends of beams, water-tight bulkheads, rivets, and inner surface of the plating, to view; the hold to be cleared; all oxidation to be removed by being cut or beaten off the several parts above-named, also from the outside plating, rivets, keel, stem, sternpost, and rudder, so as to completely lay bare all the surfaces of iron;* the planksheers and waterways, if of wood, to be entirely removed, and also the flat of upper deck, except under special circumstances, to be sanctioned by the Committee in each case: and when the vessel is so prepared, the Surveyors are to ascertain, by drilling, the thickness of the plating, also the condition of all the parts of iron above-named, and of the beams and their fastenings; and upon the Owner consenting to remove such parts as may be found defective, or objected to, or less in thickness than hereinafter admitted for repairing such vessel, and replace them with proper materials equal in quality and substance to that required in the Table G for the nine years' grade in those originally classed 12 A, and equal in quality and substance to that required in the Table G for the six years' grade in vessels originally classed 9 A or 6 A, such vessel, upon the repairs and efficiency being reported to the Committee,

* In cases where the inner surface of the bottom plating is coated with cement or asphalte, if a sufficient quantity of ceiling be removed to enable the coating to be carefully inspected, and tested by beating or chipping, and the coating be found sound and good and adhering satisfactorily to the iron, the removal of such coating will be dispensed with.

may be restored to the letter A, for a term of years not exceeding two-thirds the number of years assigned originally, subject to occasional survey.

Iron ships which have been Restored under the foregoing Rule shall be entitled to Continuation thereon, subject to the same conditions of survey and examination as are prescribed for ships proposed to be Continued at the expiration of the period first assigned to them; but, in like manner, the term of such extended continuance to be limited to a period not exceeding one-half the number of years for which the ship may respectively have been restored, without reference to the period originally assigned to them.

22. Vessels not surveyed while building will be classed A from year to year only, but for a period not exceeding six years. (*See also* Section 19.)

23. On the expiration of the terms assigned to ships classed A, they will be liable to lapse (like ships built of wood).

24. One year will be added to the character of all ships of the A class built under a roof which shall project at each end beyond the length, and on each side beyond the breadth, a quantity equal to one-half the breadth of the vessel.

IRON SHIPS ALREADY CLASSED A 1.

Iron ships built prior to the promulgation of the Rules will be allowed to remain in the Register Book classed A 1 from year to year, *subject to annual survey*, until the expiration of Six Years from their date of build, and then be examined to determine the period to which they may be entitled under the rules; and if, on such examination, it shall be found the ships are entitled to the 9 or 12 years' grade, it will be in the option of the owners either to adopt such period respectively, or continue the vessel A 1 from year to year, as above, until the expiration of the extended period; but if it shall be found that the term of years for which a vessel would have been entitled to remain on the A character has expired, she will be classed Æ, if entitled thereto, unless specially surveyed for Continuation or for Restoration.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill,
London, 1*st July*, 1866.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ILLUSTRATION OF RULES FOR BUILDING IRON SHIPS. 1863.

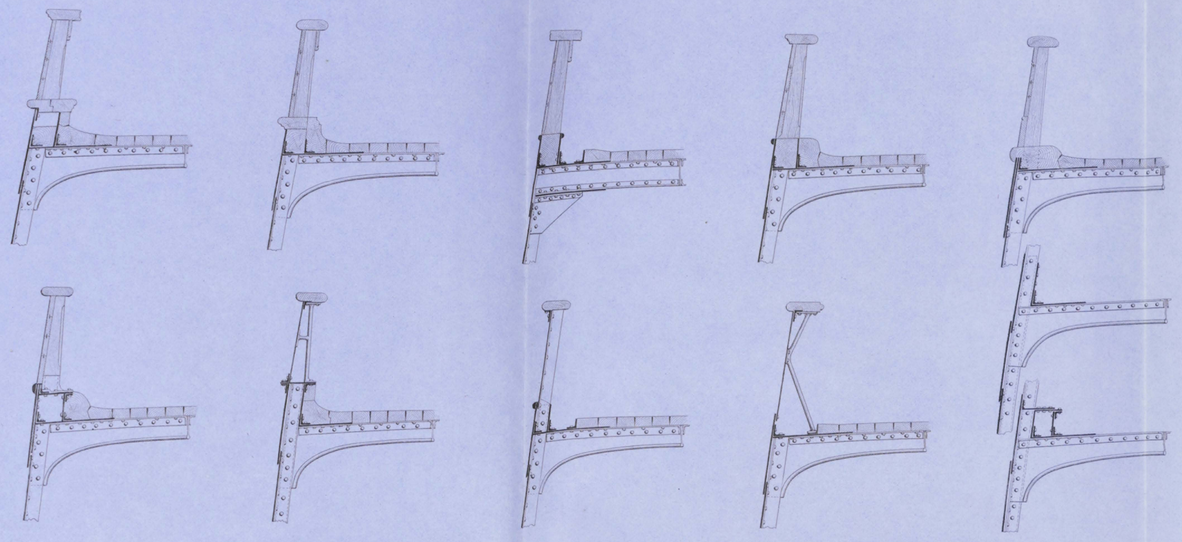

Fig. 3.

Double plate Keelson.

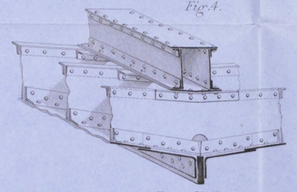

Fig. 4.

Box Keelson.

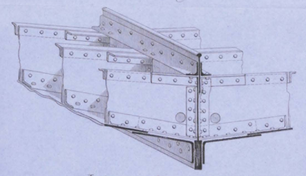

Fig. 5.

Intercostal middle line Keelson.

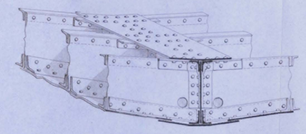

Fig. 6.

Flat plate Keel and Centre and flat plate Keelson.

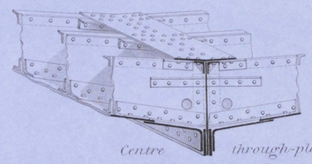

Fig. 7.

Centre through-plate and flat Keelson plate.

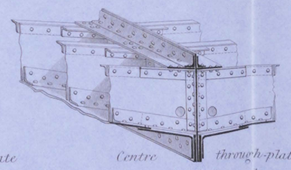

Fig. 8.

Centre through-plate and two flat Keelson plates.

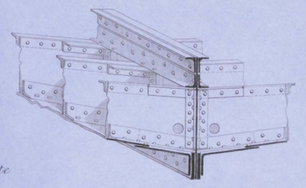

Fig. 9.

Centre through-plate Keelson.

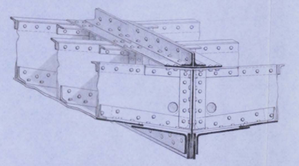

Fig. 10.

Centre through-plate Keelson.

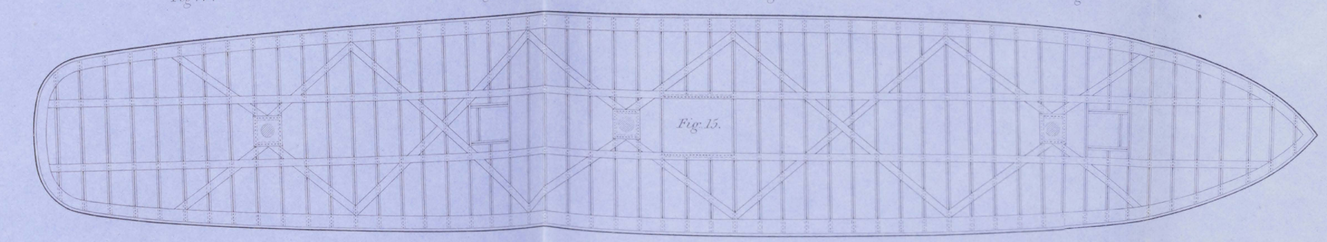

Fig. 15.

All vessels are to have tie-plates ranging all fore and aft upon each tier of beams on each side of hatchways, and wherever practicable from side to side diagonally.

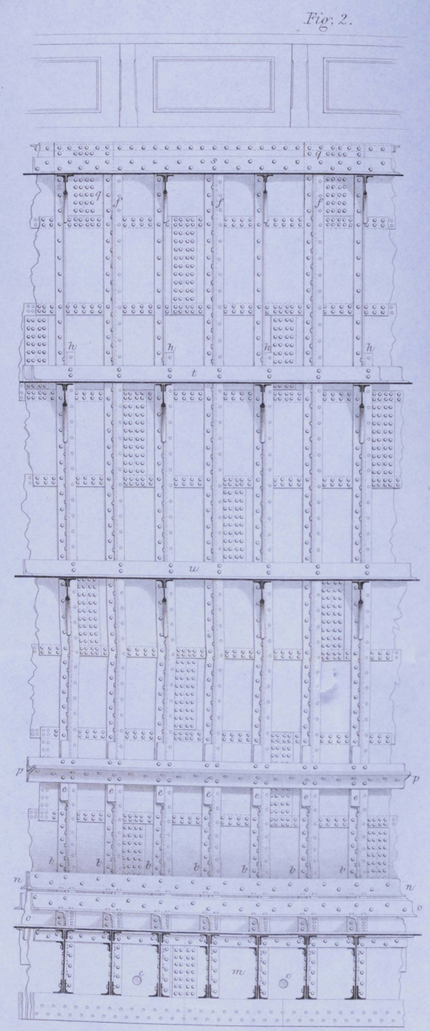

Fig. 2.

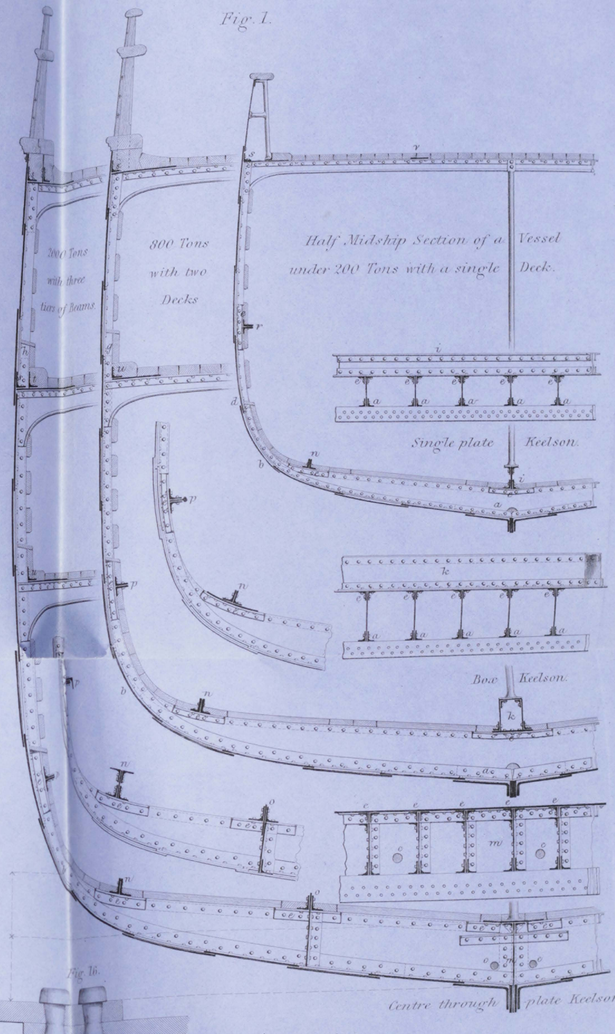

Fig. 1.

Half Midship Section of a Vessel under 200 Tons with a single Deck.

Single plate Keelson.

Box Keelson.

Centre through plate Keelson.

Fig. 16.

The rivet holes to be punched from the laying surfaces and to be countersunk all through the outer plating.

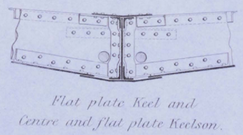

Fig. 11.

Flat plate Keel and Centre and flat plate Keelson.

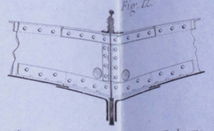

Fig. 12.

Intercostal middle line Keelson.

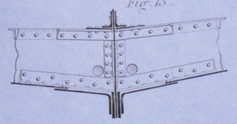

Fig. 13.

Centre through-plate Keelson.

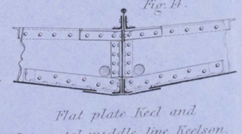

Fig. 14.

Flat plate Keel and Intercostal middle line Keelson.

Drawn by H. Cornish, Lloyd's Surveyor.

Printed by Day & Son, Limited, 17 Gate, London, W.C.

Engraved by J. W. Lowry.

TABLE G.

IRON SHIPS.—TABLE OF MINIMUM DIMENSIONS OF FRAMES, PLATING, RIVETS, KEELS, KEELSONS, STEMS, STERN POSTS, FLOOR PLATES, BEAMS, ‡ BULKHEADS, STRINGERS, &c.

All plates, and all beam and angle iron, used in ships intended for classification, are to be stamped legibly in two places with the manufacturer's trade mark, or his name and the place where made.

Gross Tonnage.	Keel, Stem, and Stern Post for all Grades.*	Distance of Frames from Moulding edge to Moulding edge all fore and aft for all Grades.	FRAMES. Dimensions of Angle Iron for all Grades.	Dimensions of Reversed Angle Iron on Frames Bulkheads and Box Keelsons for all Grades.	THICKNESS OF OUTSIDE PLATES.† Garboard Strakes* and Single Plate Middle Line Keelsons standing upon floors. A	Garboard Strakes* and Single Plate Middle Line Keelsons standing upon floors. B	From the Garboard to the upper part of Bilge, and the Sheerstrakes.* A	From the Garboard to the upper part of Bilge, and the Sheerstrakes.* B	From upper part of bilge to a perpendicular height from upper side of keel of three-fifths the internal depth of hold, measured from the upper side of upper deck in all Ships, whether spar-decked or otherwise. A	From upper part of bilge to a perpendicular height from upper side of keel of three-fifths the internal depth of hold, measured from the upper side of upper deck in all Ships, whether spar-decked or otherwise. B	From three-fifths the depth of Hold (measured from the upper side of upper deck in all Ships, whether spar deck or otherwise) to lower edge of Sheerstrake. A	From three-fifths the depth of Hold (measured from the upper side of upper deck in all Ships, whether spar deck or otherwise) to lower edge of Sheerstrake. B	‡Thickness of Stringer Plates upon Beams, Floor plates, Hooks, Crutches, & Box, or Intercostal Keelsons for all grades.	Thickness of Plates for Bulkheads for all Grades.	Dimensions of Angle Iron on Beam Stringers or Keelsons for all Grades.	RUDDER for all Grades. Diameter at the Head.	RUDDER for all Grades. Diameter at the Heel.	Thickness of Wood Flat of Upper Deck.	Gross Tonnage.
	Inches.		inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	inches.	
100 and under 200	$6\times1\frac{1}{2}$	If single frames be adopted the space from centre to centre is not to exceed 21 inches, all fore and aft; but provided an additional frame, for half the vessel's length amidships, be fitted at opposite side of each floor plate across the keel, and extended to upper part of bilges, and rivetted through floor plates and main frames, also through the outside plating, as required for main frames, the space may be increased to 23 inches in ships under 1000 tons, and to 24 inches in ships of 1000 tons and upwards.	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{6}{16}$	$2\frac{1}{4}\times2\frac{1}{4}\times\frac{5}{16}$	$\frac{8}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{6}{16}$	$\frac{6}{16}$	$\frac{5}{16}$	$\frac{6}{16}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{4}{16}$	$3\times3\times\frac{6}{16}$	3	2	$2\frac{1}{2}$	100 and under 200
200 and under 300	$6\frac{1}{4}\times2$		$3\times2\frac{1}{2}\times\frac{6}{16}$	$2\frac{1}{4}\times2\frac{1}{4}\times\frac{5}{16}$	$\frac{9}{16}$	$\frac{8}{16}$	$\frac{8}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{6}{16}$	$\frac{6}{16}$	$\frac{5}{16}$	$\frac{6}{16}$	$\frac{4}{16}$	$3\times3\times\frac{6}{16}$	$3\frac{1}{2}$	2	$2\frac{1}{2}$	200 and under 300
300 and under 400	$6\frac{1}{2}\times2\frac{1}{4}$		$3\frac{1}{4}\times2\frac{3}{4}\times\frac{6}{16}$	$2\frac{1}{2}\times2\frac{1}{2}\times\frac{5}{16}$	$\frac{10}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{8}{16}$	$\frac{8}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{6}{16}$	$\frac{7}{16}$	$\frac{5}{16}$	$3\frac{1}{2}\times3\times\frac{6}{16}$	$3\frac{3}{4}$	$2\frac{1}{4}$	3	300 and under 400
400 and under 500	$6\frac{3}{4}\times2\frac{1}{2}$		$3\frac{1}{2}\times2\frac{3}{4}\times\frac{7}{16}$	$2\frac{3}{4}\times2\frac{1}{2}\times\frac{6}{16}$	$\frac{10}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{8}{16}$	$\frac{8}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{6}{16}$	$\frac{7}{16}$	$\frac{5}{16}$	$4\times3\times\frac{6}{16}$	$4\frac{1}{4}$	$2\frac{1}{2}$	3	400 and under 500
500 and under 600	$7\times2\frac{1}{2}$		$3\frac{3}{4}\times2\frac{3}{4}\times\frac{7}{16}$	$3\times2\frac{1}{2}\times\frac{6}{16}$	$\frac{11}{16}$	$\frac{10}{16}$	$\frac{10}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{8}{16}$	$\frac{8}{16}$	$\frac{7}{16}$	$\frac{8}{16}$	$\frac{6}{16}$	$4\frac{1}{4}\times3\frac{1}{4}\times\frac{7}{16}$	$4\frac{1}{2}$	$2\frac{3}{4}$	$3\frac{1}{2}$	500 and under 600
600 and under 700	$7\times2\frac{3}{4}$		$4\times3\times\frac{7}{16}$	$3\times2\frac{3}{4}\times\frac{6}{16}$	$\frac{11}{16}$	$\frac{10}{16}$	$\frac{10}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{8}{16}$	$\frac{8}{16}$	$\frac{7}{16}$	$\frac{8}{16}$	$\frac{6}{16}$	$4\frac{1}{2}\times3\frac{1}{2}\times\frac{7}{16}$	$4\frac{3}{4}$	$2\frac{3}{4}$	$3\frac{1}{2}$	600 and under 700
700 and under 800	$7\frac{1}{4}\times2\frac{3}{4}$		$4\frac{1}{4}\times3\times\frac{8}{16}$	$3\times2\frac{3}{4}\times\frac{7}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{10}{16}$	$\frac{10}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{8}{16}$	$\frac{9}{16}$	$\frac{6}{16}$	$4\frac{3}{4}\times3\frac{3}{4}\times\frac{8}{16}$	5	3	$3\frac{1}{2}$	700 and under 800
800 and under 900	$7\frac{1}{2}\times3$		$4\frac{1}{2}\times3\times\frac{8}{16}$	$3\times3\times\frac{7}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{10}{16}$	$\frac{10}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{8}{16}$	$\frac{9}{16}$	$\frac{6}{16}$	$5\times4\times\frac{8}{16}$	$5\frac{1}{4}$	3	$3\frac{1}{2}$	800 and under 900
900 and under 1000	8×3		$4\frac{3}{4}\times3\times\frac{8}{16}$	$3\frac{1}{4}\times3\times\frac{7}{16}$	$\frac{13}{16}$	$\frac{12}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{10}{16}$	$\frac{10}{16}$	$\frac{9}{16}$	$\frac{10}{16}$	$\frac{7}{16}$	$5\times4\frac{1}{4}\times\frac{9}{16}$	$5\frac{1}{2}$	3	$3\frac{1}{2}$	900 and under 1000
1000 and under 1200	$8\frac{1}{2}\times3$		$5\times3\times\frac{9}{16}$	$3\frac{1}{2}\times3\times\frac{8}{16}$	$\frac{13}{16}$	$\frac{12}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{10}{16}$	$\frac{10}{16}$	$\frac{9}{16}$	$\frac{10}{16}$	$\frac{7}{16}$	$5\times4\frac{1}{2}\times\frac{9}{16}$	$5\frac{3}{4}$	3	4	1000 and under 1200
1200 and under 1500	9×3		$5\times3\frac{1}{2}\times\frac{9}{16}$	$3\frac{1}{2}\times3\times\frac{8}{16}$	$\frac{14}{16}$	$\frac{13}{16}$	$\frac{13}{16}$	$\frac{12}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{10}{16}$	$\frac{11}{16}$	$\frac{7}{16}$	$5\frac{1}{2}\times4\frac{1}{2}\times\frac{9}{16}$	6	$3\frac{1}{4}$	4	1200 and under 1500
1500 and under 2000	10×3		$5\frac{1}{2}\times3\frac{1}{2}\times\frac{10}{16}$	$4\times3\frac{1}{2}\times\frac{9}{16}$	$\frac{14}{16}$	$\frac{13}{16}$	$\frac{13}{16}$	$\frac{12}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{10}{16}$	$\frac{11}{16}$	$\frac{8}{16}$	$6\times5\times\frac{9}{16}$	$6\frac{1}{2}$	$3\frac{1}{2}$	4	1500 and under 2000
2000 and under 2500	12×3		$6\times4\times\frac{10}{16}$	$4\frac{1}{2}\times3\frac{1}{2}\times\frac{9}{16}$	$\frac{15}{16}$	$\frac{14}{16}$	$\frac{14}{16}$	$\frac{13}{16}$	$\frac{13}{16}$	$\frac{12}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{12}{16}$	$\frac{8}{16}$	$6\frac{1}{2}\times5\frac{1}{2}\times\frac{10}{16}$	$7\frac{1}{4}$	$3\frac{3}{4}$	4	2000 and under 2500
2500 and under 3000	$12\times3\frac{1}{4}$		$6\frac{1}{4}\times4\times\frac{11}{16}$	$4\frac{1}{2}\times3\frac{1}{2}\times\frac{10}{16}$	$\frac{15}{16}$	$\frac{14}{16}$	$\frac{14}{16}$	$\frac{13}{16}$	$\frac{13}{16}$	$\frac{12}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{12}{16}$	$\frac{8}{16}$	$6\frac{1}{2}\times5\frac{1}{2}\times\frac{10}{16}$	$7\frac{3}{4}$	4	4	2500 and under 3000
3000 and under 3500	$12\times3\frac{1}{2}$		$6\frac{1}{2}\times4\times\frac{11}{16}$	$4\frac{1}{2}\times3\frac{1}{2}\times\frac{10}{16}$	$\frac{16}{16}$	$\frac{15}{16}$	$\frac{15}{16}$	$\frac{14}{16}$	$\frac{14}{16}$	$\frac{13}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{12}{16}$	$\frac{9}{16}$	$6\frac{1}{2}\times5\frac{1}{2}\times\frac{10}{16}$	8	$4\frac{1}{2}$	4	3000 and under 3500

MEM.—The Scantlings given in the above Table are intended for Ships the length of which, measured from the fore part of the Stem to the after part of the Stern-post on the range of the Upper Deck, does not exceed seven times their breadth or ten times their depth of Hold, taken from the upper part of Floors to the top of the Upper Deck Beams. *For ships which exceed these proportions, see Section* 16. *See also exceptions in Section* 9.

‖ RIVETS. Diameter of Rivets required for Thickness of Plates - - -	$\frac{5}{8}$ of an Inch.			$\frac{3}{4}$ of an Inch.			$\frac{7}{8}$ of an Inch.			1 Inch.			Rivets to be $\frac{1}{4}$ of an inch larger in diameter in the stem, stern-post, and keel.
	$\frac{5}{16}$	$\frac{6}{16}$	$\frac{7}{16}$	$\frac{8}{16}$	$\frac{9}{16}$	$\frac{10}{16}$	$\frac{11}{16}$	$\frac{12}{16}$	$\frac{13}{16}$	$\frac{14}{16}$	$\frac{15}{16}$	$\frac{16}{16}$	

* Hollow or flat keel plates (*vide* Engravings, Fig. 6, 11, and 14) and garboard strakes, and main sheerstrakes, are not to be less in breadth than as follows, viz.:—In ships under 500 tons, 2ft.; in ships 500 and under 1000 tons, 2ft. 6in.; in ships 1000 tons and upwards, 3ft. When Hollow or Flat Plate Keels are adopted, their thickness should not be less than one and a half that of the Garboard Strake. *For Keels of other Forms, see Section* 2, and Engraving, Fig. 7, 8, 9, 10, and 13.

§ FLOOR PLATES.—The floor plates to be in depth at middle line according to the following rule, viz.:—To the vessel's depth, measured from the top of keel to the top of upper or spar deck beams amidships, add the extreme breadth of the vessel; two-fifths of that sum *in inches*, to be the depth of the floor plates at middle line; their thickness to be as given in Table; but at each end of the vessel, for one-quarter of her length, they may be reduced in thickness one-sixteenth of an inch where the plates are less than ten-sixteenths, and two-sixteenths of an inch where the plates are ten-sixteenths and upwards. The floor plates to extend up the bilges to a perpendicular height of twice the depth of floors amidships from upper side of keel at middle line (*vide b.* Fig. 1 and 2), and not to be less moulded at their heads than the moulding of the frames. A floor plate to be fitted and rivetted to every frame; and to be extended across the middle line, but where a vertical centre plate is adopted at middle line, then the floor plates are to be efficiently connected to it on each side by double vertical angle irons. Watercourses are to be formed through all the floor plates on each side of middle line, so as to allow water to reach the pumps freely. (*Vide* Fig. 5 to 14).

† PLATING.—No plates to be less in length than five spaces of frames (*vide* Fig. 2), except the fore and after hoods. No butts of outside plating in adjoining strakes, to be nearer each other, than two spaces of frames (*vide* Fig. 2). In vessels under 1200 tons the plating may be reduced from the thickness shewn in Table, one-sixteenth of an inch forward and aft, for a distance not exceeding one quarter of the length of the vessel from each end, below the upper edge of main sheerstrake, down to a perpendicular height from upper side of keel of three-fifths the internal depth of hold, including the height of the spar deck in spar deck ships; and in ships of 1200 tons and upwards, a reduction of two-sixteenths will be allowed; the plates next abaft and next afore the quarter length of the vessel, to be of an intermediate or graduated thickness, between that required amidships and the reduction allowed at the ends. In screw propelled vessels, however, no reduction is to be made in the plating at the after end, below the lower part of the rudder trunk.

BUTT STRAPS.—All plates are to be well fitted, and secured to the frames and to each other; the butts to be closely fitted by planing or otherwise, and to be united by butt straps, of not less than the same thickness as the plates, and of sufficient breadth for rivetting, as described hereafter, and to be fitted with the fibre of the iron in the same direction as the fibre of the plates to which they are rivetted; the space between the plating and the frames to have solid filling or lining pieces, closely fitted in one length, and of the same breadth as the frames. It is recommended that in all cases the sheerstrake be an outside strake, so as to admit of the butt straps or lining pieces being extended, in one piece, from the foreside of the frame next afore the butts to the aftside of the frame next abaft the butts (*vide q.* Fig. 2), or to admit of doubling the sheerstrake where it may be required.—*For breadth of sheerstrake see footnote above.*

‡ BEAMS.—Beam plates to be in depth one-quarter of an inch for every foot in length of the midship beams, and to be in thickness one-sixteenth of an inch for every inch in depth of the said beams, and to be made of H iron, T bulb iron, or bulb plate with double angle irons rivetted on upper edge; the two sides of each of these angle irons to be not less in breadth than three-fourths the depth of beam plate, and to be in thickness one-sixteenth of an inch for every inch of the two sides of the angle iron; or the beams may be composed of any other approved form of beam iron equal in strength. Where beams below the upper or middle deck (including orlop beams) have no deck laid upon them, the angle irons on their upper edges are required to be of the dimensions of the angle iron of the reverse frames. All beams to be well and efficiently connected or rivetted to the frames, with bracket ends or knee plates; each arm of knee plates at ends of beams not to be less in length than twice and a half the depth of beams, and to be in thickness equal to the beams. The beams to be placed over each other, and pillared where practicable.

§ STRINGER AND TIE-PLATES.—All vessels to have stringer plates (of the thickness given in Table), upon the ends of each tier of beams. Those upon the ends of upper deck beams in vessels with one or two decks or tiers of beams, and on ends of middle deck beams in vessels with three decks or tiers of beams, to be in width one inch for every seven feet of the vessel's entire length, for half her length amidships, and from thence to the ends of the vessel they may be gradually reduced to three-fourths the width amidships—in no case, however, is the width to be less than eighteen inches amidships. The stringer plates are to be fitted home and rivetted to the outside plating at all upper decks, and at the middle deck in vessels having three decks, with angle iron of the dimensions given in Table (*vide s.* Fig. 1): the middle deck stringer plate to have an additional angle iron extending all fore and aft inside of the frames, rivetted to the reverse angle iron on the frames, and to the stringer plate (*vide t.* Fig. 1 and 2). Stringer plates on ends of beams below the upper deck in vessels with two decks, or below middle deck in vessels with three decks, may be reduced in width to three-fourths the midship breadth above named, this breadth is to be extended all fore and aft, and to have an angle iron of the dimensions given in Table, extending all fore and aft, rivetted to the reverse angle iron on the frames, and to the stringer plates (*vide u.* Fig. 1 and 2). In cases where no deck is laid, and the width of stringer plate on ends of hold beams is objected to, it may be reduced, provided such reduction be fully compensated for. The objectionable practice of cutting through the stringer plates for the admission of wood roughtree stanchions will not be allowed. All vessels to have tie-plates ranging all fore and aft upon each side of the hatchways *on each tier of beams*, and in addition thereto the beams of the upper and middle decks, in three-decked or spar-decked ships, and of the upper deck in vessels of one or two decks, must have the tie-plates fitted from side to side diagonally (*vide* Fig. 15), wherever the arrangements of the deck will admit of them; the tie-plates are to be in width once and a half the depth of beams, and of the thickness required for stringer plates, and to be well rivetted to each other, and to the beams, deck hooks, and transoms:—and all butts to be properly shifted. Upon hold beams where no deck is to be laid, or where tie-plates would interfere with stowage of cargo, an angle iron of the dimensions given in Table for angle iron on beam stringers, placed at middle line, extending fore and aft wherever practicable, and well rivetted to all beams, deck hooks, and transoms, will be admitted in lieu thereof. All hatchways and the mast-holes of sailing ships are to be properly framed to receive half beams where required, and the latter to have mast partners at each tier of beams (except at orlop beams) the plating of which is not to be less in thickness than is required for stringer plates, and the united breadths of the plates not to be less than three times the diameter of the masts. The said plates are to be well rivetted to each other, and to the beams, and angle iron carlings; and at the decks where masts are to be wedged, an angle iron of the dimensions required for the main frames of the ship is to be properly fitted and rivetted to the plates round the mast-holes. The mast-holes and sky-lights of steam vessels must be properly secured to the satisfaction of the Surveyors.

‖ RIVETS AND RIVETTING.—The Rivets to be of the best quality, and to be in diameter as per Table; the rivet holes to be regularly and equally spaced and carefully punched opposite each other from the faying surfaces, in the laps and lining pieces or butt straps; and to be countersunk all through the outer plating (*vide* Fig. 16); the rivets not to be nearer to the butts or edges of the plating, lining pieces to butts, or of any angle iron, than a space not less than their own diameter, and not to be further apart from each other than four times their diameter, or nearer than three times their diameter, and to be spaced through the frames and outside plating, and in reversed angle iron, a distance equal to eight times their diameter apart. When rivetted up they are completely to fill the holes, and their points or outer ends are to be round or convex (*vide* Fig. 16), and not to be below the surface of the plating through which they are rivetted. All vessels to have all edges or horizontal joints of outside plating double rivetted from the keel to the height of upper part of bilges (*to d.* Fig. 1), all fore and aft; but vessels of 700 *tons and above*, intended for the highest grade, are to have all edges or horizontal joints of outside plating double rivetted *throughout** (*vide* Fig. 2). The stem, stern post, keel, edges of garboard strakes and sheerstrakes, and butts of outside plating,* and butts of floor plates, breasthooks, transoms, and plates of beams, also butts of keelsons, stringers, shelf plates, and all longitudinal ties, to be double rivetted in all vessels. The overlaps of plating, where double rivetting is required, not to be less than five and a half times the diameter of the rivets (*vide* Fig. 16); and where single rivetting is admitted, to be not less in breadth than three and a quarter times the diameter of the rivets. If double rivetting be adopted where single rivetting is allowed by the Rules, the diameter of the rivets may be reduced one-sixteenth of an inch below that prescribed by the Rules, provided that in no case the diameter be less than five-eighths of an inch. The butts and edges of outside plating to be truly fitted, carefully caulked, and made water-tight.

* *The above requirement as regards double rivetting does not apply to Poops and Forecastles.*

Lloyd's Register of Shipping, London, 2nd July, 1866.

No. 1.—A TABLE, exhibiting the differ[illegible]scriptions of TIMBER, of good to the several Terms of Years appointed

PARTS OF THE FRAME OF A VESSEL.	TWELVE YEARS.	TEN YEARS.	NINE YEARS.	EIGHT YEARS.
FLOORS	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica.	The same as in the preceding Class, and admit— Other Continental White Oak Spanish Chesnut Blue Gum.	The same as in the preceding Class, and admit— North American White Oak American Sweet Chesnut Stringy Bark Red Cedar.
1st FUTTOCKS ...	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica.	The same as in the preceding Class, and admit— ‡Other Continent. White Oak Spanish Chesnut Blue Gum.	The same as in the preceding Class, and admit— ‡North American White Oak American Sweet Chesnut Stringy Bark Red Cedar.
2nd FUTTOCKS ...	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica	The same as in the preceding Class.	The same as in the preceding Class.
3rd FUTTOCKS ... and TOP TIMBERS ...	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica.	The same as in the preceding Class.	The same as in the preceding Class.
MAIN and RIDER KEELSONS	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica	The same as in the preceding Class, and admit— Other Continental White Oak Spanish Chesnut Blue Gum	The same as in the preceding Class, and admit— North American White Oak American Sweet Chesnut Stringy Bark, Red Cedar, Pitch Pine, Larch, Hakmatack, Tamarac, Junipr.
STEM and STERN POSTS, ... TRANSOMS,..... KNIGHT-HEADS, HAWSE TIMBERS, ... APRON,..... and *DEADWOOD	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica.	The same as in the preceding Class.	The same as in the preceding Class.
BEAMS ..... and HOOKS	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, Iron Bark, Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Angelly, and Venatica.	The same as in the preceding Class.	The same as in the preceding Class.	The same as in the preceding Class, and admit— Other Continental White Oak Spanish Chesnut Blue Gum Pitch Pine Larch Hackmatack Tamarac Juniper.
KNEES	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, Iron Bark, Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Angelly, and Venatica.	The same as in the preceding Class.	The same as in the preceding Class.	The same as in the preceding Class, and admit— Other Continental White Oak Spanish Chesnut Blue Gum Pitch Pine Larch Hackmatack Tamarac Juniper.

* This Table applies to the Deadwood so far as regards the material to be used from the height of two feet above the rabbet of the keel.
‡ If the First Futtocks run up above the Light Water-mark, the use of Foreign White Oak is allowed for the SEVEN YEARS' grade only.

MEM.—The word "English" includes Timber the growth of the United Kingdom.

Quality, to be used in the TIMBERING OF SHIPS, as the same will be applicable for Ships to remain on the Character A.

SEVEN YEARS.	SIX YEARS.	FIVE YEARS.	FOUR YEARS.	PARTS OF THE FRAME OF A VESSEL.
The same as in the preceding Class, and admit— Pitch Pine, Larch, Hackmatack, Tamarac, Juniper, English Ash, Secondhand English Oak, African Oak, and §§East-India Teak.	The same as in the preceding Class, and admit— ¶Cowdie Huon Pine ¶American Rock Elm Hickory.	The same as in the preceding Class, and admit— Baltic and Amer. Red Pine, Foreign Ash, Europ. and Am. Grey Elm, ¶B. Birch, B. Walnut, Spruce Fir, White Cedar, ¶Beech.	The same as in the preceding Class, and admit— Hemlock.	FLOORS.
The same as in the preceding Class, and admit— Pitch Pine, Larch, Hackmatack, Tamarac, Juniper, Secondhand English Oak, African Oak, and §§East-India Teak.	The same as in the preceding Class, and admit— Cowdie Huon Pine English Ash American Rock Elm Hickory.	The same as in the preceding Class, and admit— Baltic and Amer. Red Pine, Foreign Ash, Europ. and Am. Grey Elm, **B. Birch, B. Walnut, **Spruce Fir, and White Cedar.	The same as in the preceding Class, and admit— Beech Hemlock.	1st FUTTOCKS.
The same as in the preceding Class, and admit— Other Cont. White Oak, Span. Chesnut, Blue Gum, N. Amer. White Oak, Amer. Sweet Chesnut, Stringy Bark, Red Cedar, Pitch Pine, Larch, Hackmatack, Tamarac, and Juniper.	The same as in the preceding Class, and admit— Second-hand English Oak African Oak §§East-India Teak Cowdie Huon Pine.	The same as in the preceding Class, and admit— Baltic and Amer. Red Pine English Ash American Rock Elm Hickory. Spruce Fir	The same as in the preceding Class, and admit— Foreign Ash, European and Amer. Grey Elm, Black Birch and Black Walnut, White Cedar, and Hemlock.	2nd FUTTOCKS.
The same as in the preceding Class, and admit— Other Continental White Oak, Spanish Chesnut, Blue Gum, N. Amer. White Oak, Amer. Sweet Chesnut, Stringy Bark, Red & White Cedar, Pitch Pine, Larch, Hackmatack, Tamarac, Juniper, Cowdie, Huon Pine, Baltic and Amer. Red Pine.	The same as in the preceding Class, and admit— Second-hand English Oak African Oak §§East-India Teak.	The same as in the preceding Class, and admit— English Ash American Rock Elm Hickory. Spruce Fir	The same as in the preceding Class, and admit— Foreign Ash, European and Amer. Grey Elm, Black Birch, Black Walnut, Yellow Pine, and Hemlock.	3rd FUTTOCKS and TOP TIMBERS.
The same as in the preceding Class, and admit— Cowdie Huon Pine Baltic and Amer. Red Pine.	The same as in the preceding Class, and admit— American Rock Elm Hickory Second-hand English Oak African Oak §§East-India Teak.	The same as in the preceding Class, and admit— English Ash Foreign Ash. Spruce Fir	The same as in the preceding Class, and admit— European and Amer. Grey Elm, Black Birch, Black Walnut, White Cedar, Beech, and Yellow Pine.	MAIN & RIDER KEELSONS.
The same as in the preceding Class, and admit— Other Cont. White Oak, Span. Chesnut, Blue Gum, N. Amer. White Oak, Amer. Sweet Chesnut, Stringy Bark, Red Cedar, Pitch Pine, Larch, Hackmatack, Tamarac, and Juniper.	The same as in the preceding Class, and admit— Cowdie Huon Pine. Secondhand English Oak African Oak §§East-India Teak.	The same as in the preceding Class, and admit— Baltic and Amer. Red Pine American Rock Elm Hickory	The same as in the preceding Class, and admit— English Ash, Foreign Ash, European and Amer. Grey Elm, Black Birch, Black Walnut, Spruce Fir, White Cedar, and Yellow Pine.	STEM & STERN POSTS, TRANSOMS, KNIGHTHEADS, HAWSE TIMBERS, APRON, and DEADWOOD.
The same as in the preceding Class, and admit— North Amer. White Oak, Amer. Sweet Chesnut, Stringy Bark, Red Cedar, Cowdie, Huon Pine, and Baltic and Amer. Red Pine.	The same as in the preceding Class, and admit— Second-hand English Oak African Oak §§East-India Teak.	The same as in the preceding Class, and admit— English Ash Foreign Ash American Rock Elm Hickory European and American Grey Elm. Spruce Fir	The same as in the preceding Class, and admit— Black Birch Black Walnut ~~Spruce Fir~~ White Cedar Yellow Pine Hemlock.	BEAMS and HOOKS.
The same as in the preceding Class, and admit— North Amer. White Oak, Amer. Sweet Chesnut, Stringy Bark, Red Cedar, Cowdie, Huon Pine, Baltic and Amer. Red Pine, Spruce Fir, and White Cedar.	The same as in the preceding Class, and admit— Second-hand English Oak African Oak §§East-India Teak.	The same as in the preceding Class, and admit— English Ash Foreign Ash American Rock Elm Hickory European and American Grey Elm.	The same as in the preceding Class, and admit— Black Birch Black Walnut Yellow Pine Hemlock.	KNEES.

¶ Black Birch, Beech, American Rock Elm, and Cowdie allowed for Floors in midships, to an extent not exceeding one-half the entire length of the keel in Ships of the SEVEN YEARS' grade. ** Black Birch and Spruce allowed for First Futtocks amidships, to the same extent in Ships of the SIX YEARS' grade.

§§ In cases where secondhand Teak of approved quality is proposed to be used, application may be made to the Committee with a view to its being allowed a higher grade (not exceeding two years) than as set forth above.

No. 2.—A TABLE, exhibiting the different Descriptions of TIMBER, of good will be applicable to the several Terms of Years

PARTS OF THE OUTSIDE OF A VESSEL.	TWELVE YEARS.	TEN YEARS.	NINE YEARS.	EIGHT YEARS.
KEEL ..... to the 1st FUTTOCK HEADS	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, Iron Bark, Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Angelly, Venatica, other Continental White Oak, Spanish Chesnut, Blue Gum, N. Amer. White Oak, Amer. Sweet Chesnut, Stringy Bark, Red Cedar, Pitch Pine, Larch, Hackmatack, Tamarac, Juniper, Hickory, §Amer. Rock Elm, Europ. & Am. §Grey Elm, and §Beech.	The same as in the preceding Class, and admit— Cowdie Huon Pine English Ash Foreign Ash Black Birch Black Walnut.	The same as in the preceding Class, and admit— Baltic and Amer. Red Pine	The same as in the preceding Class.
1st FUTTOCK HEADS..... to LIGHT WATER-MARK	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, Iron Bark, Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Angelly, Venatica, other Continental White Oak, Spanish Chesnut, and Blue Gum.	The same as in the preceding Class, and admit— North American White Oak American Sweet Chesnut Stringy Bark Red Cedar Pitch Pine Larch Hackmatack Tamarac Juniper.	The same as in the preceding Class, and admit Cowdie Huon Pine Baltic and Amer. Red Pine.	The same as in the preceding Class, and admit— American Rock Elm Hickory European and American Grey Elm Beech.
LIGHT WATER-MARK to WALES	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica.	The same as in the preceding Class, and admit— Other Continental White Oak Spanish Chesnut Blue Gum	The same as in the preceding Class, and admit— North American White Oak, American Sweet Chesnut, Stringy Bark, Red Cedar, Pitch Pine, Larch, Hackmatack, Tamarac, Juniper, Cowdie, Huon Pine, Baltic and Amer. Red Pine.
WALES ..... BLACKSTRAKES TOPSIDES ..... and SHEERSTRAKES	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, & Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica.	The same as in the preceding Class.	The same as in the preceding Class, and admit— Other Continental White Oak Spanish Chesnut, Blue Gum, Pitch Pine, Larch, Hackmatack, Tamarac, and Juniper.
UPPER-DECK WATERWAYS SPIRKETTING ... and PLANKSHEERS	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Angelly, Venatica, Pitch Pine, Larch, Hackmatack, Tamarac, Juniper, Cowdie, Huon Pine, and Baltic and American Red Pine.	The same as in the preceding Class, and admit— Other Continental White Oak Spanish Chesnut Blue Gum.	The same as in the preceding Class.
INSIDE PLANKING.				
SHELVES, CLAMPS, LIMBER and BILGE STRAKES, CEILING in HOLD and BETWIXT DECKS, also SPIRKETTING and WATERWAY BELOW the UPPER DECK.	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese, and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, Iron Bark, Mahogany of hard texture, Cuba Sabicu, Pencil Cedar, Angelly and Venatica.	The same as in the preceding Class, and admit— Other Continental White Oak Spanish Chesnut Blue Gum.	The same as in the preceding Class, and admit— N. American White Oak Amer. Sweet Chesnut Stringy Bark Red Cedar.	The same as in the preceding Class, and admit— Pitch Pine Larch Hackmatack Tamarac Juniper Cowdie Huon Pine Baltic and Amer. Red Pine
RUDDER and WINDLASS MAIN PIECES.	English, African, and Live Oak, Adriatic, Italian, Spanish, Portuguese and French Oak, East-India Teak, Morung Saul, Greenheart, Morra, and Iron Bark.	The same as in the preceding Class, and admit— Mahogany of hard texture Cuba Sabicu Pencil Cedar Angelly and Venatica.	The same as in the preceding Class.	The same as in the preceding Class.

§ The use of *Elm* and *Beech*, in Ships above the EIGHT YEARS' grade, to be restricted to a height from the lower part of the main Keel, of *one-third* of the internal depth of the Ship measured, in *midships*, from the top of the Limber Strake to the top of the Upper Deck Beams.

MEM.—The word "English" includes Timber the growth of the United Kingdom.

Quality, to be used in the OUTSIDE and INSIDE PLANKING OF SHIPS, as the same appointed for Ships to remain on the Character A.

SEVEN YEARS.	SIX YEARS.	FIVE YEARS.	FOUR YEARS.	PARTS OF THE OUTSIDE OF A VESSEL.
The same as in the preceding Class.	The same as in the preceding Class, and admit— Spruce Fir White Cedar Yellow Pine.	The same as in the preceding Class.	The same as in the preceding Class, and admit— Hemlock.	KEEL to the 1st FUTTOCK HEADS.
The same as in the preceding Class, and admit— English Ash Foreign Ash Black Birch Black Walnut.	The same as in the preceding Class, and admit— Spruce Fir White Cedar.	The same as in the preceding Class, and admit— Yellow Pine.	The same as in the preceding Class, and admit— Hemlock.	1st FUTTOCK HEADS to LIGHT WATER-MARK.
The same as in the preceding Class.	The same as in the preceding Class, and admit— American Rock Elm Hickory.	The same as in the preceding Class, and admit— European and American Grey Elm Spruce Fir White Cedar Yellow Pine	The same as in the preceding Class, and admit— English Ash Foreign Ash Black Birch Black Walnut Beech Hemlock.	LIGHT WATER-MARK to WALES.
The same as in the preceding Class, and admit— North American White Oak, American Sweet Chesnut, Stringy Bark, Red Cedar, Cowdie, Huon Pine, and Baltic & Amer. Red Pine.	The same as in the preceding Class.	The same as in the preceding Class, and admit— American Rock Elm Hickory Yellow Pine. Spruce Fir.	The same as in the preceding Class, and admit— Europ. and Amer. Grey Elm Black Birch Black Walnut ~~Spruce Fir~~ White Cedar and Hemlock.	WALES, BLACKSTRAKES, TOPSIDES, and SHEERSTRAKES.
The same as in the preceding Class, and admit— North American White Oak American Sweet Chesnut Stringy Bark Red Cedar.	The same as in the preceding Class.	The same as in the preceding Class, and admit— American Rock Elm Hickory ††Yellow Pine Secondhand English Oak African Oak §§East-India Teak ~~Spruce Fir~~	The same as in the preceding Class, and admit— Europ. and Amer. Grey Elm Black Birch Black Walnut ~~Spruce Fir~~ White Cedar Hemlock.	UPPER-DECK WATERWAYS, SPIRKETTING, and PLANKSHEERS.
INSIDE PLANKING.				
The same as in the preceding Class.	The same as in the preceding Class, and admit— †American Rock Elm Hickory.	The same as in the preceding Class, and admit— English Ash, Foreign Ash, Black Birch, Black Walnut, Spruce Fir, White Cedar, Beech, Yellow Pine, Secondhand English Oak, African Oak, and §East-India Teak.	The same as in the preceding Class, and admit— European and Amer. Grey Elm Hemlock.	SHELVES, CLAMPS, LIMBER and BILGE STRAKES, CEILING in HOLD and BETWIXT DECKS, also SPIRKETTING and WATERWAY BELOW the UPPER DECK.
The same as in the preceding Class, and admit— Other Continental WhiteOak Span. Chesnut, Blue Gum, N. Am. White Oak, Am. Sweet Chesnut, Stringy Bark, Red Cedar, ‖Pitch Pine, ‖Larch, ‖Hackmatack, ‖Tamarac, and ‖Juniper.	The same as in the preceding Class.	The same as in the preceding Class, and admit— ‖Baltic and ‖American Red Pine ‖English Ash Secondhand English Oak African Oak §§East-India Teak. ‖ Spruce Fir.	The same as in the preceding Class, and admit— American Rock Elm Hickory ‖Black Birch ‖Black Walnut ‖~~Spruce Fir~~ ‖White Cedar ‖Beech.	RUDDER and WINDLASS MAIN PIECES.

† American Rock Elm allowed for Limber Strakes, Bilge Strakes, and Ceiling between them in Ships of the SEVEN YEARS' grade.

‖ The materials marked thus ‖ under the head of "Rudders and Windlass" allowed in Ships of 300 Tons and under *only*.

†† Yellow Pine allowed for Waterways of Upper Deck in Ships of the SEVEN YEARS' grade, if properly fastened, as prescribed in Table B., and provided the Beams are well secured, independently of the Waterways.

§§ In cases where second-hand Teak of approved Quality is proposed to be used, application may be made to the Committee with a view to its being allowed a higher grade (not exceeding two years) than as set forth above.

MEM.—The word "English" includes Timber the growth of the United Kingdom.

No. 4.—FORM OF THE REPORT OF ORIGINAL SURVEY.

No. —— Survey held at ———— Date ————18— on the ————Master ————

Tonnage under tonnage deck ———— | Built at ———— When built ———— Launched ————

Ditto of poop —— or spar deck —— | By whom built ———————— Owners ————

Total tonnage ———————— | Port belonging to ———— Destined Voyage ————

If Surveyed while building, Afloat, or in Dry Dock ————

	Feet.	Inches		Feet.	Inches		Feet.	Inches
Length as per section 39 ... Length of Keel.....			Extreme Breadth outside.....			Depth of Hold		

Number of Decks ———— (Depth from limber-strake to under side of lower deck beam ————)

Scantlings of Timber.	In Ship.			Required per Rule.		
	Sided.	Moulded. Middle.	Moulded. Ends.	Sided.	Moulded. Middle.	Moulded. Ends.
Timber and Space						
Floors						
1st Foothooks						
2nd Ditto						
3rd Ditto						
Top Timbers						
Deck Beams No. ... { Average Space						
Deck Beams, length amidships						
Hold Beams No. ... { Average Space						
Hold Beams, length amidships						
Keel						
Scarphs of Ditto						
Keelsons						
Scarphs of Ditto						

Outside Plank.	Inches. In Ship.	Inches. Required per Rule.
Garboard Strakes .		
Garboard to Bilge		
Bilge Planks		
Bilge to Wales ...		
Wales.....		
Topsides.....		
Sheerstrakes		
Planksheers		
Waterways—		
Upper Deck ...		
Lower Deck ...		
Do. faying surface against Timbers		
Upper Deck		

Dimensions of Ship per Register.
length— breath— depth—

Inside Plank.	Inches. In Ship.	Inches. Required per Rule.
Limber Strakes.....		
Bilge Planks		
Ceiling in Flat		
Ditto Bilge to Clamp		
Hold Beam Clamps		
Deck Beam ditto ...		
Ceiling 'twixt Decks		
H old Beam Shelfs		
Deck Beam ditto ...		

Size of Bolts in Fastenings, distinguishing whether Copper, Yellow Metal, or Iron; also of Treenails.

	Copper or YM. in Ship.	Iron in Ship.	Inches required per Rule.
Heel-Knee and Deadwood abaft			
Scarphs of Keel, No.			
Keelson Bolts through Keel at each Floor			
Bolts through Heels of Timbers against Deadwood			
Transoms and Throats of Hooks			
Arms of Hooks			
Through Bilge and Limber Strakes.....			
Thickstuff over Double Floors...			

	Copper or YM. in Ship.	Iron in Ship.	Inches required per Rule.
Butt End Bolts			
Short Bolts in Ceiling.....			
Pintles of the Rudder			
Hold Beam Bolts in { Waterway			
Hold Beam Bolts in { Knees			
Hold Beam Bolts in { Shelf or Clamp			
Deck Beam Bolts in { Waterway			
Deck Beam Bolts in { Knees			
Deck Beam Bolts in { Shelf or Clamp			
Nails or Bolts in Flat of Deck...			
Treenails.....Inches			

Timbering.—The Space between the Floor Timbers and Lower Foothooks is —— Inches.

The Space between the Top Timbers is —— Inches.

The Floors consist of ———— The First Foothooks of ————

The Second Foothooks of ———— The Third Foothooks and Top Timbers of ————

The Shifts of the first and second Foothooks are not less than ——

[*N.B.—When less than prescribed by the Rule, state how many.*]

The rest of the Shifts of the Frame are ——

The frame is —— squared from the first Foothook Heads upwards, and —— free from sap, and from thence downwards the Frame is ——

The ———— Frames are ———— bolted together to the Gunwale.

[*N.B.—If not, state how bolted.*]

The Butts of the Timbers are —— close together; their thickness not less than —— of the entire mouldings at that place.

The frame is —— chocked with —— Butt at each end of the chock. The Main piece of Rudder is ——— Of Windlass is ———

The Keel is ——— The Main Keelson is ——— and —— free from all defects.

The Stem and Stern Post of ——— The Transoms, Knight Heads, Hawse Timbers, and Aprons, of ——— Deadwood, of ——— and are —— free from all defects.

The Deck and Hold Beams of —— The Breasthooks of —— The Knees of ——.

PLANKING OUTSIDE.—From the Keel to the Height defined in Note to Table A, or —— to the First Foothook Heads the Plank is ———

From the above-named height to the Light Water Mark ———

From the Light Water Mark to the Wales ———

The Wales and Blackstrakes are ——— The Topsides and Sheerstrakes ———

The Spirketting and Planksheers ——— The Waterways { Upper Deck ——— / Lower Deck ———

The Decks ——— State of ———

The Shifts of the Planking are not less than —— feet —— inches. [*N.B.—If less than prescribed by the Rule, state whether general or partial, and if partial, in what part of the Ship.*]

The Planking is wrought ——— between, *and without step-butting.*

PLANKING INSIDE.—The Limber-strakes and Bilge-strakes are ———

The Ceiling, Lower Hold, and between Decks ——— Shelf Pieces and Clamps ———

FASTENINGS.—To hold Beams ——— Deck Beams ———

Number of Breasthooks ——— Pointers ——— Crutches ———

Butt End Bolts are of ——— in the Bottom ——— Bolts in each Butt End ——— through and clenched.

Bilge and Limber Strakes ——— bolted through and clenched. Treenails of ——— How made ———

Thickstuff over Double Floors ——— bolted through and clenched. General Quality of Workmanship ———

We certify that the above is a correct description of the several particulars therein given.

Builder's Signature ——— *Surveyor's Signature* ———

Her Masts, Yards, &c. are in ——— condition, and sufficient in size and length.

She has SAILS.	CABLES, &c.				ANCHORS, and their Weights.			
No.		Fathoms.	Size.	Tested to as per Certificate		No.	Weight. Ex. Stock.	Tested to as per Certificate
Fore Sails,	Chain				Bower ...			
Fore Top Sails,	Hempen Stream Cable...							
Fore Topmast Stay Sails,	Hawser.....				Stream ...			
Main Sails,	Towlines							
Main Top Sails, and	Warp				Kedge ...			
	All of —— quality.							

Her standing and Running Rigging ——— sufficient in size and ——— in quality.

She has ——— Long Boat and ——— The present state of the Windlass is ———

Capstan ——— Rudder ——— Pumps ———

General Remarks, and Statement and Date of Repairs, if any.

Order for Special Survey, No. — Date ———

Order for Ordinary Survey, No. — Date ———

Dates of Surveys held while building, as per Section 35.

1st. When the Frame is completed ———

2nd. When the Beams are put in, &c. ———

3rd. When completed, and before the plank be painted or payed ———

Present condition of Caulking of Bottom ——— Deck ——— and Waterways ———

If Sheathed, Doubled, Felted, or Coppered ——— When last done ———

I am of opinion this Vessel should be classed ———

The amount of the Fee .....£ : : is received by me,

Special .....£ : :

Certificate.....£ : :

Committee's Minute ——— 18—

Character assigned ———

No. 5.—IRON SHIPS.

No. —— Survey held at —— Date —— 18— on the —— Master ——

Tonnage under tonnage deck —— Built at —— When built —— Launched ——

Ditto of poop —— or spar deck —— By whom built —— Owners ——

Ditto of engine room —— Port belonging to ——

Total Register tonnage —— Destined Voyage ——

Gross tonnage ——

If Surveyed while Building, Afloat, or in Dry Dock ——

	Feet.	Inches.		Horse.	
Length aloft.....					
Extreme Breadth			Power of Engines		No. of Decks ——
Depth from top of Upper Deck Beam to top of Floor					

Dimensions of Ship per Register, length——breadth——depth——

	Inches in Ship.	Inches Required per Rule. for tons Scale.
Keel, if Bar Iron, depth and thickness		
,, if Plate Iron, breadth and thickness		
Stem, if Bar Iron, moulding and thickness.....		
,, if Plate Iron, breadth and thickness.....		
Stern-post, if Bar Iron, moulding and thickness		
,, if Plate Iron, breadth and thickness		
Distance of Frames from moulding-edge to moulding-edge, all fore and aft.....		

	In Ship.			Required per Rule.		
	Inches.	Inches.	16ths.	Inches.	Inches.	16ths.
Frames, Size of Angle Iron, single or double.....						
,, ,, Reversed Iron, if to every frame or every frame						
Floors, depth and thickness of Floor Plate at mid line						
,, Do. do. at bilge keelson						
,, Size of Reversed Angle Iron, and No. at top of Floor Plate						
Beams, Deck (No.), double AngleIron,Plate, Tee, or Bulb Iron						
,, ,, double or single Angle Iron on edge						
,, ,, average space between						
,, Hold, or Lower Deck, (No.) double Angle,Tee,Plate, or Bulb Iron ...						
,, ,, double or single Angle Iron on edge						
,, ,, average space between						
,, Paddle, sided and moulded , thickness of Plate , size of Angle Iron						
,, Engine ,, ,,						
Keelson, single or double plate, box, or intercostal.....						
,, Size of Plate						
,, Size of Angle Irons						
,, Side, single or double, plate, box, or intercostal.....						
,, Bilge (No.) at each Bilge, single, or double, plate, or box						

	In Ship.		Required per Rule.	
	Inches.	16ths.	Inches.	16ths.
Plates in Garboard Strakes, breadth and thickness				
Ditto from Garboard to upper part of Bilges				
,, from upper part of Bilge to a perpendicular height from upper side of Keel of $\frac{3}{4}$ths the entire depth of Hold				
,, from $\frac{3}{4}$ths depth of Hold to lower edge of shearstrake.....				
,, Shearstrake, breadth and thickness				
Butt Straps to outside plating, breadth and thickness				
Gunwale Plate or Stringer on ends of Upper Deck Beams, breadth and thickness				
Angle Iron on ditto.....				
Stringer or Tie Plates fore and aft, on Upper Deck Beams, outside Hatchways				
Diagonal Tie Plates on ditto				
Planksheer, materials and scantlings				
Waterway ditto ditto				
Flat of Upper Deck, thickness and material				
,, ,, how fastened to Beams.....				
Ceiling betwixt Decks and in Hold, thickness and material.....				
Clamps or Spirketting ditto				
Stringers Plates on ends of Hold or Lower Deck Beams, breadth and thickness				
Stringer or Tie Plates fore and aft outside Hatchways, on Hold or Lower Deck Beams				
Stringers in Hold.....				
Flat of Lower Deck, thickness and material				
Main piece of Rudder, diameter at head...				
,, ,, ,, at heel...				

(*Can the Rudder be unshipped afloat* ——)

Bulkheads, No. — Thickness of ——

,, Height up ——

,, how secured to the sides of the ship ——

,, size of vertical angle irons —— and their distance apart ——

Transoms, material —— or, if none, in what manner compensated for.

Knight-heads, and Hawse Timbers ——

The Frames extend in one length from ——— to ——— riveted through plates with (in.) rivets, about ( ) apart.

The reverse angle irons on the floors extend in one length across the middle line from —— to ——

„ „ on the frames „ „ from ——— to ———

Keelson, how are the various lengths of plates or angle irons connected? ———

Plates, Garboard, double or rivetted to keel, double or at upper edge, with rivets (ins.) diameter, averaging (in.) apart.

„ edges from Garboards to upper part of bilge, worked clencher, double or single rivetted; with rivets (in.) diameter, averaging (ins.) apart.

„ butts from keel to turn of bilge, worked carvel with butt straps ( ) thick, double or single rivetted; with rivets (in.) diameter, averaging (ins.) apart. Do the butt straps lap over and rivet through the lands of the strake below?———

„ edges from bilge to sheerstrake, worked carvel with a lining piece ( ) thick, or clencher, double or single rivetted; with rivets (in.) diameter, averaging (ins.) apart. Do the butt straps lap over and rivet through the lands of the strake below?——

„ edges of sheerstrake, double or single rivetted? At upper edge ——— At lower edge ———

„ butts from bilge to planksheers, worked carvel with butt straps ( ) thick, double or single rivetted; with rivets (in.) diameter, averaging (ins.) apart. Breadth of laps in double rivetting ( ). Breadth of laps in single rivetting ( ).

Butt Straps of Keelsons, Stringer and Tie Plates, double or single rivetted?———

Plankshеer, how secured to the plating of the sides
Waterway „ „ plankshеer and to the beams } *Explain by sketch, if necessary.*

Deck Beams, how secured to the side ———

Hold or Lower Deck „ ———

Paddle „ „ ———

No. of breasthooks ——— crutches ———

What description of iron is used for the Frames, Beams, Keelsons, Tie and Stringer Plates, Outside Plating, &c.?———

Manufacturer's Name or Trade Mark———

We certify that the above is a correct description of the several particulars therein given.

——— *Builder's Signature.*

——— *Surveyor's Signature.*

Workmanship.—Are the lands or laps of the clench work in all cases in breadth at least five and a half times the diameter of the rivets in double rivetted edges and butts, and at least three and a quarter times the diameter of the rivets where single rivetting is admitted?———

Do the edges of the carvel work and of the butts fay close together throughout their length without requiring any making good of deficiencies? ———

Do the fillings between the ribs and plates fill in solid with single pieces, or are they in short lengths of various thicknesses? ———

Do the holes for rivetting plate to frames, butt straps, or plate to plate, &c., conform well to each other? ——— and are the rivet holes well and sufficiently counter sunk in the outer plate? ———

Are there any rivets which either break into or have been put through the seams or butts of the plating? ———

Her Masts, Bowsprit, Yards, &c. are in ——— condition, and sufficient in size and length.

(*If they are of Iron or Steel, give the Scantlings of Plating, Angle Irons, &c., and further explain by a Sketch, showing how the lower Masts and Bowsprit are constructed, showing the number of Plates and Angle Irons, mode of rivetting, quality of Materials, and if stamped with Maker's name.*

She has SAILS.

CABLES, &c., tested at ———

No.			No. on Chain seen by me.	No. and Date on Certificate.	Fathoms.	Inches.	Tested to Tons.
	Fore Sails,	Chain					
	Fore Top Sails,	Hempen Stream Cable					
	Fore Topmast Stay Sails,	Hawser					
	Main Sails,	Towlines					
	Main Top Sails, and	Warp					
		All of —— quality.					

ANCHORS, tested at ———

	No.	No. on Anchor seen by me.	No. and Date on Certificate.	Weight Ex. stock.	Tested to Tons.
Bowers					
Stream					
Kedges					

Her Standing and Running Rigging ——— sufficient in size, and ——— in quality.

She has ——— Long Boat and ———

The present State of the Windlass is ——— Capstan ——— and Rudder ———

Pumps ———

Order for Special Survey No. —— Date ———

Order for Ordinary Survey No. —— Date ———

Dates of Surveys held while building, as per Section 18.

1st. On the several parts of the frame, when in place, and before the plating was wrought ———
2nd. On the plating during the progress of rivetting —
3rd. When the beams were in and fastened, and before the decks were laid ——
4th. When the ship was complete, and before the plating was finally coated ——
5th. After the ship was launched ———

State if she has a Spar Deck ——— Poop ——— or Forecastle ———

GENERAL REMARKS,—

In what manner are the surfaces preserved from oxidation? Inside ———
Ditto ditto Outside ———

I am of opinion this vessel should be classed ———

The amount of the Fee.....£ : : is received by me,
Special .....£ : :
Certificate (if required).....£ : :

Committee's Minute ——— 18 —
Character assigned ———

No. 6.—FORM OF REPORT OF ANNUAL SURVEY.

No. —— Survey held at ——— Date ——— 18 —— on the ——— Master ——— Tonnage ——— Built at ——— When built ——— By whom built ——— Owners ——————— Port belonging to ——— Destined Voyage ——— If Surveyed Afloat or in Dry Dock ——— Last Survey, No. ——— Port of ——— Classed ———

The present condition of the

Decks	Treenails	Windlass and Capstan .....
Waterways	Breasthooks and Stemson	Pumps .....
Comings	Transoms, Pointers, and Crutches ...	Boats .....
Upper Deck Beams and Fastenings ...	Timbers of the Frame at the openings	Masts, Yards, &c. .....
Lower Deck Beams and Fastenings ...	Ditto at other places ...	Sails .....
Planksheers	Keelsons	Anchors, No. of .....
Sheerstrakes	Clamps and Shelfs	Cables.....
Topsides	Ceiling	Hawsers and Warps .....
Wales	Rudder	Standing & Running Rigging .....
Plank (Bottom) and Counter	Copper, when put on	

Caulking of Bottom, Deck, and Waterways.

General Observations and Opinion,

Committee's Minute ——— 18

Character assigned ———

Certificate (if required)

No. 7.—FORM OF CERTIFICATE OF CHARACTER.

Lloyd's Register of British and Foreign Shipping.

ESTABLISHED 1834.

No. ——

No. 2, *White Lion Court, Cornhill.*

London, 18

These are to Certify, That the ——————— of ——————— ——————— Master, ——————— Tons, bound to ———————, has been Surveyed at ——————— by the Surveyors to this Society, and reported to be, on the ———————

and that she has been CLASSED and entered in the REGISTER BOOK of this Society with the character ———————

Witness my hand,

Charge

——————— *Chairman.*

———————, *Secretary.*

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER'S CERTIFICATE.

The following is a true Account of the Particulars of the Machinery and Boilers:—

ENGINES.—Here state description of Engines, whether Direct Acting or Geared; Inverted, Horizontal, Diagonal, or Oscillating Cylinders; No. of Cylinders, &c.

ENGINES, maker of ... ...
„ age of ... ...
„ last time taken out ... ...
„ present condition... ... ...

Diameter of Cylinder ... ...
Length of Stroke ... ...

No. per Minute of Engines ... ...
„ of Screw ... ...

Estimated Power ... ...
Effective Power ... ...
Diameter of Screw (or Paddle-wheels) ... ...
Pitch of Screw ... ...
No. of Blades (or Floats) ... ...
Description of Screw (or Floats) ... ...
Holding down Bolts, size... ... ...
„ present condition ... ...

Bilge Pumps, No. ( ) and size ... ...
Feed „ No. ( ) and size ... ...
Spare Gear, if usual quantity on board Vessel ... ...
Fuel, where stowed... ... ...
„ space between Coal Bunkers and Boilers ... ...
„ what quantity is space provided ... ...
Donkey Engine and Boiler ... ...
„ if Fitted in Engine Room or on Deck ... ...
„ can pump be worked by hand ... ...
„ size of pump ( ) and stroke ... ...
„ is hose of sufficient length to reach every part of the vessel ... ...
No. ( ) and condition of hand pumps, if fitted in Engine Room ... ...

BOILER.—Here state description of Boiler, and No.; if Tubular, or Flues; No. of Furnaces; if Fitted with superheating apparatus; if Fired athwartships, or from fore, or after end of Boiler, &c.

BOILER, Maker of... ... ...
„ age of ... ...
„ when last taken out ... ...
„ present condition ... ...
„ working pressure ... ...
No. of surface Blow-off Cocks to each Boiler ... ...

Can each Boiler be used separately... ... ...
What clear space between top of Boiler and Woodwork ... ...
What clear space between Funnel and Woodwork ... ...
Are Engine and Boiler Keelsons well connected fore and aft. ... ...

Screw Shaft length diameter Tunnel, thickness of plating
height width if water-tight door on Engine Bulkhead

Port———————*Day of*——————— 18

——————— hereby certify that the whole of the above machinery and Boilers of the Iron (or Wood) Screw (or Paddle) Steam Vessel ——————— belonging to ———————, whereof ——————— is Master, ——————— Tons Register, and H. P. have been carefully inspected and examined by ——————— at ———————, and ——— found the same, at this date, in good order and safe working condition.

Marine Engineers.

No. 174.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

PROVING HOUSE

FOR TESTING ANCHORS, CHAIN CABLES, &c.,

WEST INDIA DOCK, NEW ROAD, POPLAR, E.

SUPERINTENDENT, T. M. GLADSTONE, C.E.

REGULATIONS.

I.—That every Chain, Anchor, or other material brought to the Establishment for the purpose of being tested, examined, and certified, must be accompanied with a delivery note setting forth full particulars. The Committee will not be liable for any error in the delivery note, nor for any defect or deficiency.

II.—No new Chain Cable can be tested if painted or blacked.

III.—All articles shall be tested in consecutive order, as they are received, except under special circumstances, the grounds for such exception to be recorded by the Superintendent. All articles will be tested with all possible dispatch, but the Society will not be responsible or liable for the consequences of any delay.

IV.—Every article, when tested, shall be stamped with the distinguishing mark required by the Act Vict. 27, 28, cap. 27; also with that of the Society.

V.—All repairs to be done in the usual working hours, namely, from 8 A.M. to 6 P.M., unless under special circumstances.

VI.—When any article is ready for delivery, the Superintendent shall give notice thereof to the parties sending the same, with an account of the charge due thereon.

VII.—If any article be not removed within fourteen days after notice, the owner shall be charged for rent, at the rate of sixpence per ton, or part of a ton, for every week that the same shall remain beyond the time above mentioned.

VIII.—The Committee may detain any Chain Cable, or Anchor, which shall have been tested until the charges thereon shall be paid; and if such charges shall not be paid within three months after the testing of such Chain Cable, or Anchor, the Committee may cause such Chain Cable, or Anchor, to be sold by auction, and shall out of the purchase-money deduct the expenses of such sale, and all other expenses incurred by the Committee with respect to such Chain Cable, or Anchor, including all

lawful charges on the same, and shall pay the surplus thereof (if any) on demand to the owner of such Chain Cable, or Anchor, or to the Captain, or Master of the vessel, or other person on whose application the said Chain Cable, or Anchor, had been tested.

IX.—No person engaged at the Testing House will be permitted to receive any fee or perquisite, on pain of instant dismissal.

X.—All old or scrap iron, whether from defective links or otherwise, must be immediately removed; and if not, will be forfeited, and become the property of the Society.

XI.—A Certificate of identity, signed by the Superintendent, countersigned by the Secretary, and stamped with the official seal of the Society, will be delivered with each article. In no case will a duplicate Certificate be issued, except with the sanction of the Committee. If any alteration should occur with regard to any article, after the issuing of the Certificate, the particulars shall be endorsed on the back by the Superintendent, or by the Surveyor to the Society at the port or place where notice of such alteration shall be given.

XII.—All Chains shall be submitted to the Admiralty Proof; but on the written request of the owner, a portion—not less than four links—may be tested to a higher, or to the breaking strain; and such proofs may be recorded on the Certificate.

XIII.—If any *second-hand* Chain shall be found, upon a third test, not to sustain the Admiralty Proof, then the Certificate to be given for such Chain will be only up to the proof that shall be 10 per cent. less than the breaking-point of the Chain; or the Chain may be taken back uncertified, on payment of the charge for the proofs. No Certificate whatever will be granted for *New Chains* which will not satisfactorily sustain the Admiralty Proof.

XIV.—All Anchors shall be submitted to the Admiralty Proof; but no Certificate will be issued if the permanent deflection exceeds $\frac{3}{4}$ of an inch.

XV.—In all cases the weight of Anchors for Testing shall be exclusive of Stock.

XVI.—No person is to be admitted into the Testing House without an order from the Secretary or uperintendent.

By Order of the Committee,

GEORGE B. SEYFANG,

Secretary.

2, *White Lion Court, Cornhill, London, E.C.,*
31*st August*, 1865.

CHARGES.

For the present the charges for testing will be 20 per cent. below the charges authorized by the Board of Trade.

N.B.—The Dock dues, of 1*s.* 6*d.* per Ton, will in all cases be added to the above charges.

For all other articles, according to their nature, quality, and description.

N.B.—*Every Chain sent to the Proving House to be tested must be in good order, and have the Shackles, Pins, and Forelocks, all duly fitted, or a charge for labour will be made, according to the circumstances. Every Anchor should be with the Stock in such condition as to admit of its easy removal.*

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, E.C.,
London, 31st August, 1865.

NOTICE.—*Manufacturers can, on application, arrange for space on the premises, on which to hold a Stock of Chains and Anchors, to suit the convenience of their Trade.*

No. 175.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

RULES AND REGULATIONS.

NOTICE is hereby given, that in pursuance of Resolutions passed by the Committee, the Rules of this Society have been amended as follows: viz.—

Spruce Fir allowed in Ships of the 5 years' grade for all parts, except stem and sternpost, transoms, knightheads, hawse timbers, apron, and deadwood.

Second-hand English and African Oak and East-India Teak allowed for stem and sternpost in Ships of the 6 years' grade.

Section 37 has been amended at the eleventh line, thus:—"In all cases the chocks are to be of a description of wood equal to the best material required by the Rules for the timbers which they unite, *except the floorhead chocks*, which may be of the materials allowed by the Rules for first foothooks provided they be *butted chocks*."

The Rules for Continuation (section 54), Restoration (sections 55 to 57), and for the character A in red (section 60), have been amended, so far as regards the Survey of Ships built in the British North American Colonies and Fir Ships.

For Restoration:—It is required that British North American built Ships and Fir Ships, of 500 tons and upwards, *shall be doubled diagonally*, in accordance with Section 68.

For Continuation (*Survey No. 2*):—The regulation rendering it *imperative* that British North American built Ships and Fir Ships shall be doubled diagonally, is discontinued, it being at the option of the owner to submit his Ship to an examination which is prescribed in lieu thereof.

For the Character A in Red:—The same examination as is prescribed in Survey No. 2, for continuation of Ships built in the British North American Colonies is required. In no case, however, will a British North American built Ship or Fir Ship of 1,000 tons and upwards be allowed to retain the character A in red *after the expiration of twice the number of years originally assigned to her*, unless she is doubled diagonally.

Copies of Table A, and of the amended Rules above alluded to, may be obtained on application at this Office, or to the Surveyors at the outports.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.,
21st September, 1865.

No. 181.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

SHIPS CLASSED A, A IN RED, OR Æ WITH THE ASTERISK (IN RED) WHOSE CHARACTERS, EXPIRE ON THE 31ST DECEMBER 1865.

NOTICE is hereby given, that in pursuance of the Rules, Section 59, and of a Resolution passed this day by the Committee of Lloyd's Register of British and Foreign Shipping :—

" All Ships classed A for a term of years, and which term will expire at the end of the year 1865, will, on the 31st December next, have the word '*expired*' inserted against their names in the Register Book, and if not re-surveyed in the interim, they will appear without character in the reprint of the Register Book in June next."

The foregoing resolution will likewise apply to ships classed A in Red, or Æ with the Asterisk, whose period of exemption from special re-survey will terminate on the 31st December next.

MEM.—Should the vessels return to this country prior to the 30th June next, they must be submitted to survey with a view to their being classed in accordance with the Rules.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.,
2nd November, 1865.

No. 182.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

SHIPS CLASSED A IN RED, OR Æ.

THE Rules, Sections 60 and 61, requiring that ships classed A in red, or Æ shall be surveyed annually, or on their return from every foreign voyage:—

NOTICE is hereby given, that in accordance with the above Rules, and in pursuance of a Resolution passed this day by the Committee, the Characters of Ships classed A in red, or Æ which shall not have been surveyed since the year 1863, will be omitted in reprinting the Register Book (in June next) for the year 1866-67.

By order of the Committee,

GEORGE B. SEYFANG,
Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.,
2nd November, 1865.

N.B.—In the case of Ships which it shall be made to appear, by letter addressed to the Secretary, have not been in any port in the United Kingdom since 1863, the above Resolution will not be applied.

No. 183

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

RULES AND REGULATIONS.

NOTICE is hereby given, that in pursuance of a Resolution passed by the Committee, the following has been added as a foot note to the Rules, Section 68:—

"Ships hereafter doubled, if the doubling be iron fastened, will lose their character, *if such fastenings be coppered over.*"

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.,
21*st September*, 1865.

No. 184.

[CIRCULAR.]

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

SIR,

The question of outside planking, or doubling, being Iron fastened, having recently occupied the attention of the Committee, I am directed to express their desire that whenever ships so fastened are stripped in your district, you will give particular attention to the bolts, (the condition of which should be ascertained by driving some of them out, or otherwise), and that you will state distinctly the result of such examination on your reports.

I am, Sir,

Your obedient Servant,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.
4th November, 1865.

No. 185.

[Circular.]

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

SIR,

The Committee having frequently experienced much difficulty in dealing with the Classification of Iron Ships, the tonnage of which has exceeded that of the Scale in the Rules upon which they have been built, they have felt it right, in justice to the public, to come to a determination to adhere strictly to the Rules in this respect in all future cases which may come before them, and to class the ships accordingly.

I request, therefore, that you will at once give notice in writing to all the Shipbuilders in your district of the above determination, and caution them as to the risk they will run in laying down vessels too near the maximum tonnage for the class they seek for them.

I am, Sir,

Your obedient Servant,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.,

14*th December*, 1865.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

THE great importance of attention being paid to the adjustment of the Compasses of Iron Ships, has induced the Committee of Lloyd's Register to print and circulate amongst the owners of Iron Ships the following correspondence, which has been forwarded to them by the Board of Trade.

Although the matter does not come strictly within the province of this Society, yet the Committee, being anxious to promote everything that may tend to the preservation of life and property, earnestly entreat the attention of the Captains of Ships to this important question, and they also take the opportunity of intimating the necessity of attention to the heaving the lead, which is the best security when approaching the land.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

No. 2, *White Lion Court, Cornhill, London, E.C.,*
28*th December*, 1865.

MEM. — Copies of the Correspondence alluded to may be obtained by Subscribers on application to the Secretary.

No. 186.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

IRON SHIPS.

RULES AND REGULATIONS.

NOTICE is hereby given that Section 16 of the Rules for Iron Ships, page 46, has been made more complete, and will stand as follows: viz.—

SECTION 16.—In cases of ships which exceeed in length fourteen depths, *or seven breadths,* the builders are to submit to the Committee, through the resident Surveyor, their plans for giving the vessel sufficient additional strength longitudinally. The depth for the foregoing purpose in spar decked ships is to be taken from the under side of the "tonnage" or middle deck, to the top of the floor plates.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.,
11th January, 1866.

No. 188.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ANCHORS AND CABLES.

WITH reference to the requirements of the Committee that "all Anchors and Chains supplied to Ships claiming to be classed with the figure 1 in the Register Book of this Society, must be tested up to the Admiralty Proof at a machine *under the control and superintendence of some responsible public body*, so as to enable it to be recognised as a *public machine*,"

NOTICE is hereby given, that the following Chain and Anchor Testing Machines have been approved and recognised by the Committee as *public machines* :—

LONDON.

Lloyd's Chain and Anchor Proving House, Poplar; Superintendent, Mr. Thos. M. Gladstone, C.E.

LIVERPOOL.

Mersey Docks and Harbour Board's Chain and Anchor Testing Machines; Superintendents, Mr. W. Macdonald and Mr. James Haslam.

TYNE.

Lloyd's Tyne Public Chain and Anchor Proving House (at Low Walker); Superintendent, Mr. Robert Burrell.

SUNDERLAND.

Sunderland Public Chain and Anchor Testing House; Superintendent, Mr. John Thompson.

TIPTON.

Tipton Public Proving Machine, erected by the Staffordshire Public Chain and Anchor Testing Company (Limited); Superintendent, Mr. Samuel Tregenna.

No. 188.—*continued.*

NETHERTON.

Netherton Public Proving Machine, erected by the Staffordshire Public Chain and Anchor Testing Company (Limited); Superintendent, Mr. Matthew Kelly Reade.

JERSEY.

Jersey Mutual Insurance Company's Machine; Superindent, Mr. John M'Allen.

BRISTOL.

Bristol Public Chain and Anchor Testing Machine (Marsh Street, Bristol); Superintendent Mr. Thomas Brooks.

CHESTER.

Chester Public Proving Machine (at Saltney, near Chester), erected by the Cambrian Public Chain and Anchor Testing Company (Limited); Superintendent, Mr. Andrew S. Jack.

By order of the Committee,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, London, E.C.,
20th February, 1866.

MEM.—In cases where Ships have been supplied with Anchors and Cables which have been tested at a *Public Machine*, the fact will be noted in the Register Book thus, (A. & C. P.), signifying that the Anchors and Chains have been so proved.

No. 193.

[CIRCULAR.]

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

SIR,

The Committee having felt themselves called upon, in many instances, to withhold the Fig. 1 in the classification of Ships, on account of a deficiency in the weight of one or more of the Bower Anchors, and being desirous of obviating the inconvenience which may be thus occasioned, request that you will call the attention of Shipowners and others in your district to the subject, and intimate to them that if the requirements of the Rules, as set forth in Table 22, be not complied with, both as regards the size and length of Cables, number and weight of Anchors, and their respective proof tests, the Fig. 1 for Stores will not in any such cases be assigned.

I am, Sir,

Your obedient Servant,

GEORGE B. SEYFANG,

Secretary.

No. 2, White Lion Court, Cornhill, E.C.,

London, 29th March, 1866.

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